THE RIVER BASIN WATER QUALITY MANAGEMENT PLAN FOR KENTUCKY

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INTRODUCTION

OHIO RIVER BASIN LOCATION WITHIN KENTUCKY

The State of Kentucky is divided into ten river basins for the preparation of a state-wide Water Quality Management Plan pursuant to Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972. These ten river basins are:

1. Big Sandy River Basin
2. Licking River Basin
3. Kentucky River Basin
4. Salt River Basin
5. Green River Basin
6. Upper Cumberland River Basin
7. Lower Cumberland River Basin
8. Tennessee River Basin
9. Mississippi River Basin
10. Ohio River Basin

The Ohio River Basin planning area includes the Ohio River main stem in Kentucky, the Little Sandy River, the Tradewater River and many small creeks and unnamed tributaries discharging directly into the Ohio River. Exhibit 1.1m illustrates the location of the Ohio River Basin (ORB) in its geographical relationship to the other river basins in Kentucky.

The Ohio River Basin planning area in Kentucky consists of 5820 square miles. An additional 33,300 square miles (about 82 percent) of the state drains into the Ohio River through seven larger tributaries and these are: the Big Sandy River, the Licking River, the Kentucky River, the Salt River, the Green River, the Cumberland River and the Tennessee River. The Ohio River forms the northern boundary of the State of Kentucky from the Big Sandy River to the Mississippi River and runs a total of 664 miles along the borders of three states: Ohio, Indiana, and Illinois. The entire Ohio River is a series of dams and impoundments. The old low head dams are now being replaced by higher head dams forming more extensive reservoirs.

OHIO RIVER BASIN LOCATION WITHIN COUNTIES AND AREA DEVELOPMENT DISTRICTS

The Ohio River Basin drains all or part of thirty-four counties within nine Area Development Districts (ADD) in the State of Kentucky. These are: Rowan County in the Gateway ADD; Boyd, Carter, Elliott, Greenup and Lawrence counties in the Fivco ADD; Bracken, Lewis and Mason counties in the Buffalo Trace ADD; Boone, Campbell, Carroll, Gallatin, Kenton and Pendleton counties in the Northern Kentucky ADD; Henry, Jefferson, Oldham and Trimble counties in the Jefferson ADD; Breckinridge, Hardin and Meade counties in the Lincoln Trail ADD; Daviess, Hancock, Henderson, Union and Webster counties in Green River ADD; Caldwell, Christian, Crittenden, Hopkins and Livingston counties in the Pennyrile ADD; and Ballard and McCracken counties in the Purchase ADD. The location of the Ohio River Basin in relation to the thirty-four counties and nine Area Development Districts is shown in Exhibit 1.2m.

PAST WATER QUALITY MANAGEMENT PLANNING

In the past various agencies have prepared plans, reports and studies related to water quality improvement in the Ohio River Basin planning area. Efforts of these agencies are briefly summarized here.

The U.S. Army Corps, in cooperation with the U.S. Public Health Service, made one of the earliest and the most comprehensive surveys of the Ohio River and its tributaries for pollution control and published its findings in a report to the Ohio River Committee in 1943. This report includes the Ohio River Basin planning area in Kentucky. The Army Corps, together with other agencies, has made a second comprehensive survey of the Ohio River Basin in 1969. Part of this study consisted of water resources development and wastewater control needs in the Ohio River Basin. This study also included comprehensive studies on Groundwater, Agriculture, Fish and Wildlife Resources and Outdoor Recreation which are related to water quality planning in the Ohio River Basin in Kentucky.

In 1948 the interstate agency Ohio River Valley Water Sanitation Commission (ORSANCO) was formed for pollution abatement in the Ohio Valley. Over the years ORSANCO has recommended objectives for pollution control and established guidelines for limiting minimum water quality characteristics and basic standards for the treatment of wastes. Parallel to waste treatment requirements and regulatory actions, ORSANCO, in cooperation with state and federal agencies, has developed a Water Quality Monitoring Strategy for the Ohio River and the lower reaches of the major tributaries. A total of twenty water quality monitoring stations with robot monitors have been set up on the Ohio River to continuously monitor water quality.

In the past, the Kentucky Water Pollution Control Commisssion prepared annual reports on the status of waste discharges and related water quality problems in the State. More recently the Division of Water (Quality) has taken the lead in the preparation of Water Quality Plans for the State. The Division has prepared the Kentucky State Continuing Plan in 1974, a Program Plan for Water Quality Management in the State in July 1974 and the Kentucky Water Quality Report to Congress in April 1975. The State Continuing Plan identifies all Water Quality Limited Segments in Kentucky and the criteria used in classifying these segments as Water Quality Segments.

Comprehensive water and sewer plans for the nine Area Development Districts covering the Ohio River Basin planning area were completed in June 1973. These plans include the condition and adequacy of existing water and wastewater facilities in their respective districts in terms of present and future requirements taking into consideration population and economic growth. Also included in these planning reports are the cost estimates for expanding existing facilities or constructing new facilities as needed and the possible sources for funding these facilities.

U.S. EPA in its 1974 Report to the Congress on National Water Quality Inventory has made a detailed assessment of the existing water quality conditions in the entire Ohio River Valley. This report identifies the pollution problems in the Ohio River and sources causing them. In 1972 the U.S. EPA in conjunction with the Kentucky Water Pollution Control Commission prepared a Water Quality Management Plan for the Boyd and Greenup counties in Kentucky. EPA also prepared a Waste Load Allocation Report for the Markland Pool on the Ohio River in 1974.

PROJECT PURPOSE

The State of Kentucky has engaged Metcalf & Eddy Engineers to prepare a water quality basin plan for the Ohio River basin in Kentucky including the Little Sandy River, the Tradewater River and Tygarts Creek pursuant to State Continuing Planning process under Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972 and 40 CFR Parts 130-131.

The law requires:

(1) that all river drainage basins in each state be divided into sub-basins (to be called segments) and all sources of municipal and industrial wastes (designated as point sources) and wastes from agricultural runoff, acids from mine drainage, brines from oil well operations (designated as non-point sources) etc. be identified.

(2) that all streams receiving point and non-point source wastes in a sub-basin (segments) be identified to determine whether such wastes are violating or will violate in the future the water quality requirements and standards established for that particular stream.

(3) that future conditions in the streams be evaluated using effluent waste loads estimated on the basis of projected population, industrial and economic growth.

(4) that a plan for managing water quality in the State be developed on the basis of existing and projected population and economic growth.

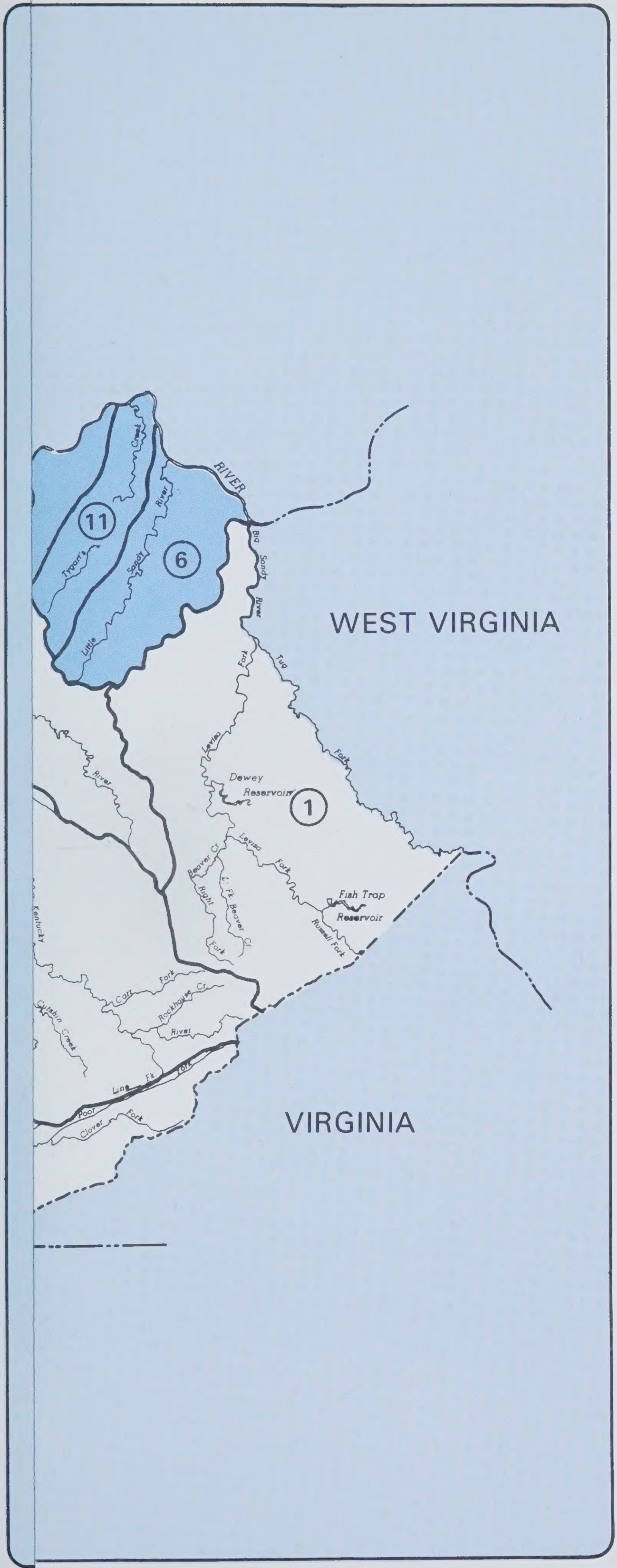
(5) that all such plans be continuously updated by each state every year with the latest population and economic growth figures.

(6) that all waste sources be classified as significant point or non-point sources of pollution if the effect of such waste on a receiving stream alters its water quality noticably.

The purpose of the basin plan is to provide the State of Kentucky with management tools that can be used to continually upgrade a sound water pollution abatement program within the basin and to provide the State with information that can form the basis upon which decisions can be made and results evaluated. In evaluating conditions on the Ohio River main stem in Kentucky, the objective has been to work with ORSANCO in this review.

REPORT STRUCTURE

This report is organized to reflect the outline recommended by the Division of Water (Quality), Kentucky Department of Natural Resources and Environmental Protection for the preparation of a Water Quality Management Plan for the State. The report consists of six chapters and six appendices. Chapter II presents a summary of the principal findings of the report. Chapter III contains the background information and data used for the preparation of the plan. In Chapter IV the Water Quality Management Status in the Ohio River main stem and minor tributaries is presented. Chapter V contains a basin-wide management plan for this basin. Chapter VI contains pertinent information related to Public Participation. The detailed background data for the Water Quality Basin Plan in the Ohio River main stem and minor tributaries are presented in Appendix A. The details of segment analysis which are used for classification of individual segments are presented in Appendix B. Appendix C contains regulations and legal aspects of the plan. Definition of terms used in the report are contained in Appendix D and Appendix E contains the list of references. Appendix F contains details of the Ohio River main stem.


RIVER
Tygart's Creek
Little Sandy River
11
6
Big Sandy River
WEST VIRGINIA
Tug Fork
Levisa Fork
Dewey Reservoir
1
Levisa Fork
Beaver Cr.
Right Fork
L. Fk. Beaver Cr.
Fish Trap Reservoir
Russell Fork
River
Kentucky
Carr Fork
Rockhouse Cr.
River
Cutshin Creek
Line Fk
Fork
Poor Fork
Clover Fork
VIRGINIA

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 1.1m

BASIN LOCATION

LEGEND
KENTUCKY DRAINAGE BASINS

1	BIG SANDY
2a	LOWER CUMBERLAND
2b	UPPER CUMBERLAND
3	GREEN RIVER
4	KENTUCKY RIVER
5	LICKING
6	LITTLE SANDY
7	MISSISSIPPI
8	OHIO MINOR TRIBUTARIES
9	TENNESSEE
10	TRADEWATER
11	TYGART'S CREEK
12	SALT RIVER

10
0
10
20
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40

GRAPHIC SCALE IN MILES

Base Data: U. S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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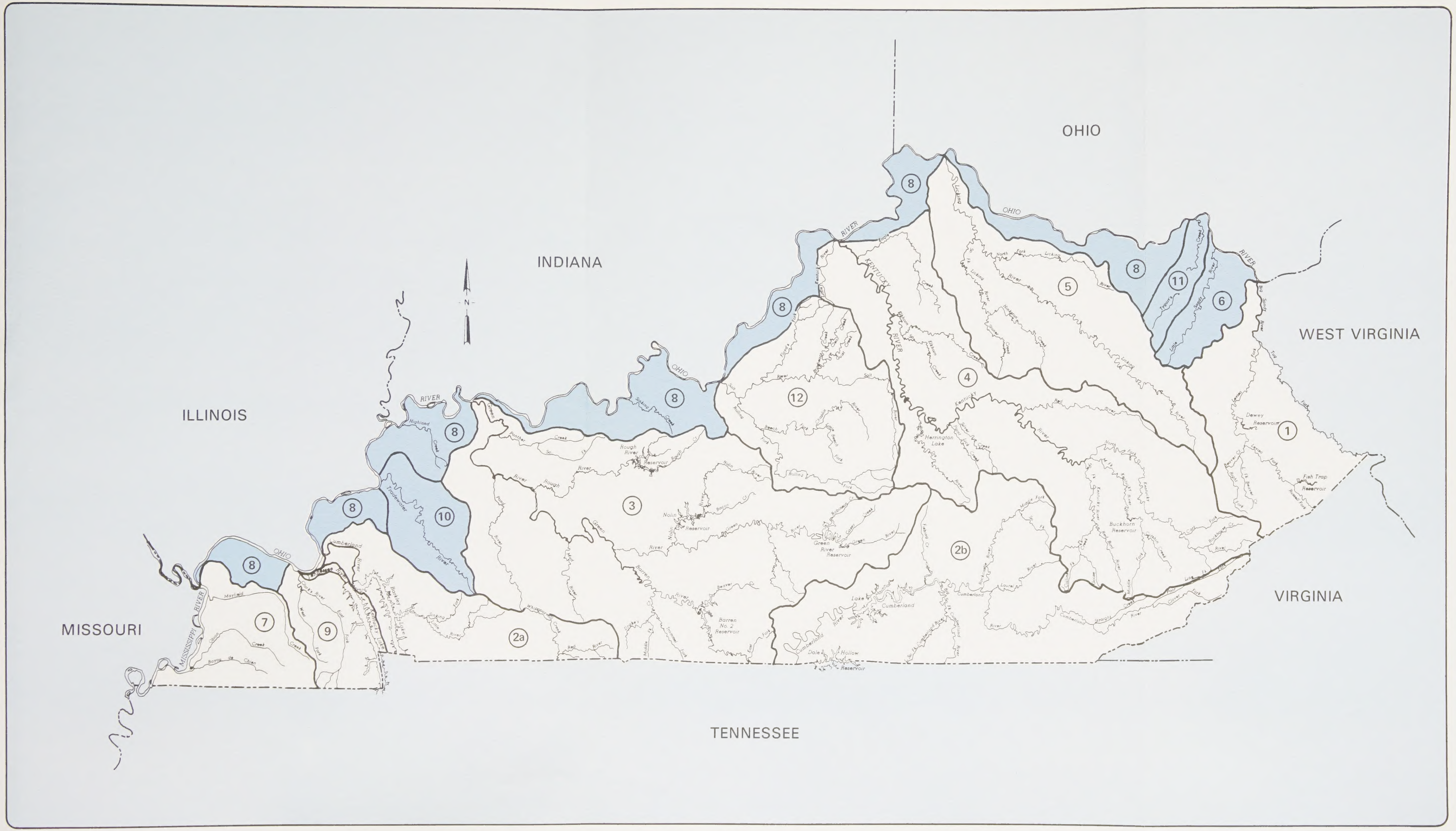
OHIO
INDIANA
ILLINOIS
MISSOURI
WEST VIRGINIA
VIRGINIA
TENNESSEE
N
OHIO RIVER
MISSISSIPPI RIVER
KENTUCKY RIVER
Rough River Reservoir
Nolin Reservoir
Green River Reservoir
Barren No. 2 Reservoir
Herrington Lake
Buckhorn Reservoir
Dewey Reservoir
Fish Trap Reservoir
Lake Cumberland
Dale Hollow Reservoir
1
2a
2b
3
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

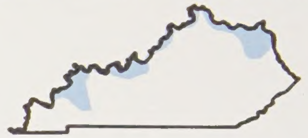

EXHIBIT 1.1m

BASIN LOCATION

LEGEND

KENTUCKY DRAINAGE BASINS

1	BIG SANDY
2a	LOWER CUMBERLAND
2b	UPPER CUMBERLAND
3	GREEN RIVER
4	KENTUCKY RIVER
5	LICKING
6	LITTLE SANDY
7	MISSISSIPPI
8	OHIO MINOR TRIBUTARIES
9	TENNESSEE
10	TRADEWATER
11	TYGART'S CREEK
12	SALT RIVER

10 0 10 20 30 40

GRAPHIC SCALE IN MILES

Base Data: U. S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
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METCALF & EDDY, INC
Boston New York Palo Alto Chicago

Worthington
Russell
RIVER
ASHLAND
atlettsburg
8

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 1.2m

AREA DEVELOPMENT DISTRICTS

LEGEND

COUNTY OUTLINES

STREAMS

BASIN OUTLINE

ADD OUTLINES

AREA DEVELOPMENT DISTRICTS

1	PURCHASE ADD
2	PENNYRILE ADD
3	GREEN RIVER ADD
4	LINCOLN TRAIL ADD
5	JEFFERSON ADD
6	NORTHERN KENTUCKY ADD
7	BUFFALO TRACE ADD
8	FIVCO ADD
9	GATEWAY ADD

10 0 10 20 30 40

GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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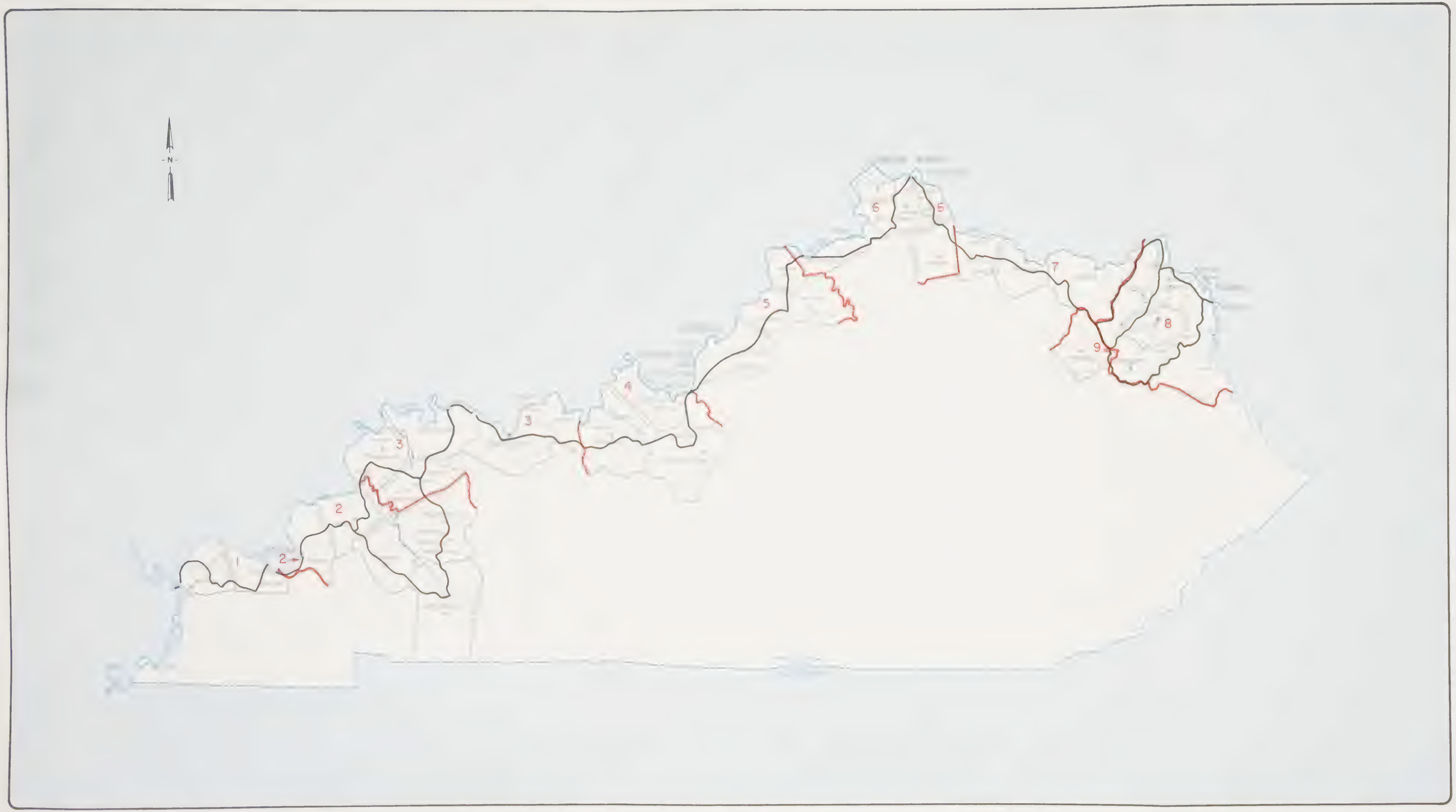


OHIO RIVER BASIN
AND MINOR TRIBUTARIES

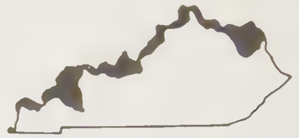


EXHIBIT 1.2m

AREA DEVELOPMENT DISTRICTS

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
ADD OUTLINES

AREA DEVELOPMENT DISTRICTS

1	PURCHASE ADD
2	PENNYRILE ADD
3	GREEN RIVER ADD
4	LINCOLN TRAIL ADD
5	JEFFERSON ADD
6	NORTHERN KENTUCKY ADD
7	BUFFALO TRACE ADD
8	FIVCO ADD
9	GATEWAY ADD

10 0 10 20 30 40
GRAPHIC SCALE IN MILES

Base Data U S Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago

SUMMARY

This report contains the Water Quality Basin Plan for the Ohio River and Minor Tributaries, the Little Sandy River, the Tradewater River and the Tygarts Creek basins in the State of Kentucky. This Water Quality Basin Plan is prepared to fulfill the requirements of Sec. 303(e) of the Federal Water Pollution Control Act amendments of 1972 and 40 CFR Parts 130-131. The drainage areas for the basin are as follows:

Ohio River Main Stem & Minor Tributaries	3813 sq. miles
Little Sandy River	724 sq. miles
Tradewater River	943 sq. miles
Tygarts Creek	340 sq. miles
Total	5820 sq. miles

The basin planning area is divided into three categories: Urban, Rural Non-Agricultural, and Rural Agricultural. Urban areas are considered to be incorporated places with populations of 2500 and more. Rural Non-Agricultural places are incorporated places with populations of less than 2500. All other areas are considered to be Rural Agricultural. Following is a tabulation of the three categories:

Category	Number	Area (sq. mi.)	Percent of Total
Urban	16	274	4.7
Rural Non-Agricultural	36	52	0.9
Rural Agricultural	--	5494	94.4

At present (1975) a total of 913,118 persons live within this planning area. It is estimated that the projected populations within this planning area for the years 1980 and 1995 will be 961,331 and 1,102,355 respectively. A summary of the population divisions into the three categories for the years 1960, 1970, 1975, 1980 and 1995 are presented here:

	Population				
Category	1960	1970	1975	1980	1995
Urban	548,232	623,864	681,687	730,486	851,140
Rural Non-Agricultural	42,309	47,649	49,216	46,429	48,994
Rural Agricultural	195,223	188,730	182,215	184,416	202,221
Total	785,764	860,243	913,118	961,331	1,102,355

All significant municipal, domestic, and industrial point source wastewater effluent discharges in the basin are identified and located on maps together with the streams that receive these effluent discharges. In the Ohio River Basin there are forty-seven (47) significant municipal discharges, one hundred sixty-six (166) significant domestic discharges, and forty-six (46) significant industrial discharges. Seventeen (17) of the significant municipal discharges, and twenty-four (24) of the significant industrial discharges in the basin are on the Ohio River main stem. Thirty (30) of the significant municipal discharges, all one hundred sixty-six (166) significant domestic discharges, and twenty-two (22) of the significant industrial discharges are on the minor tributaries in the basin.

Existing discharge characteristics of the point source wastewater discharges are either taken from the permit files of the Division of Water (Quality), Department of Natural Resources and Environmental Protection, or estimated based on the type of existing treatment. These existing wastewater effluent characteristics are then used to model the existing water quality of the receiving streams. The Universities of Kentucky and Louisville (UK/UL) have done the water quality modeling for the minor tributaries and the Ohio River Valley Water Sanitation Commission (ORSANCO) has done the water quality modeling on the Ohio River main stem.

The results of the water quality modeling for the minor tributaries indicated their assimilative capacities, and are used to determine whether the minimum Dissolved Oxygen standard (DO = 5 mg/L) and/or the maximum Ammonia-Nitrogen (NH_3-N = 4 mg/L) standard are violated or not under existing conditions. In the case of those tributaries where standards violations occurred, additional treatment levels are imposed so that no violations occur. Water quality modeling for the tributaries are also done for estimated 1980 and 1995 waste loads to determine future treatment requirements for compliance with the water quality standards.

The entire study area is subdivided into segments based on drainage characteristics, population, significant point and non-point source discharges, and possible future development. These segments serve as the basic planning unit in water quality management. All significant effluent discharges from point sources in each of these segments have been identified and located. Following is a summary of the number of segments in each of the four basins and the number of segments that receive significant point and non-point source discharges:

Basin	Total Number of Segments	Number of Segments Receiving Significant Point and Non-Point Waste Discharges
Ohio River & Minor Tributaries	140	75
Little Sandy River	13	12
Tradewater River	14	12
Tygarts Creek	6	4
Total	173	103

For each segment in each basin, population and employment projections have been made for the years 1975, 1980, 1995 and are presented in Chapter III.

Each one of the one hundred seventy-three segments in the Ohio River Basin is classified either as Water Quality Limited (WQL) or as Effluent Limited (EL) in accordance with the definitions in 40 CFR Section 130.11. A segment is classified as WQL if it is known that water quality of streams in the segment does not meet applicable water quality standards and/or is not expected to meet the standards even after application of effluent limitations related to secondary and/or best practicable as required under Sections 301b(1)A and 301b(1)B of the Water Quality Act Amendments of 1972. If, however, the segments meet the applicable water standards and/or is expected to meet the standards after application of effluent limitations as required under the law, it is classified as an Effluent Limited segment. A summary of the segment classification in the Ohio River basin is presented here:

Summary of Segment Classification

	No. of Water Quality Limited Segments	No. of Effluent Limited Segments	Total No. of Segments
Ohio River & Minor Tributaries	54	86	140
Little Sandy Run	6	7	13
Tradewater River	12	2	14
Tygarts Creek	2	4	6
Total	74	99	173

A segment in the Ohio River Basin may have been classified as WQL due to any one of the following eight causes:

1. Point source Wastewater Discharge
2. Point Source & Acid Mine Drainage
3. Point Source & Urban Runoff
4. Acid Mine Drainage
5. Combined Sewage Overflow
6. Urban Runoff
7. Combined Sewage & Urban Runoff
8. Waste Load from Upstream Segments

Statistics relating to causes for classifying a segment as Water Quality Limited are presented below.

Summary of Causes for WQL Classification

Causes	Ohio River	Minor Tributaries of Ohio River	Little Sandy River	Tradewater River	Tygarts Creek	Total
1. Point Sources	--	26	3	3	2	34
2. Point Source & Acid Mine Drainage	--	1	2	5	--	8
3. Point Source & Urban Run-off	--	3	--	--	--	3
4. Acid Mine Drainage	--	1	1	4	--	6
5. Combined Sewage Overflow	6	1	--	--	--	7
6. Urban Runoff	5	2	--	--	--	7
7. Combined Sewage & Urban Runoff	4	--	--	--	--	4
8. Waste Load from Upstream Segments	5	--	--	--	--	5
Total	20	34	6	12	2	74

Total maximum daily load (TMDL) and maximum theoretical daily load (MTDL) in lbs/day are calculated for each Water Quality Limited Segment. These loads indicate the maximum allowable and maximum theoretical loads that may be discharged in a segment without violating the water quality segments.

A water quality basin plan for the Ohio River Basin is presented here. This plan identifies all water pollution problem areas within the basin in order of their importance, sources that cause those problems, and outlines required treatments for municipal, domestic, and industrial wastewater discharges so that water quality standards can be met.

For all Water Quality Limited segments in which the violations are due to point source waste loads, advanced wastewater treatment will be required in order to meet the applicable water quality standards. Of the thirty (30) municipal discharges on the tributaries in ORB, one will need addition of post aeration to existing treatment and twenty-five will require advanced treatment in order to meet water quality standards. In addition, upgrading of collection systems is also required in some cases. Seven of the municipal plants (Crestview, Flatwoods, Morganfield, Parkhill, Raceland, Shively, and Worthington) will be regionalized. Cost estimates have been prepared for collection,treatment, and disposal of municipal wastewaters. A breakdown of the total cost in the ORB for the different aspects of collection and disposal are presented here:

Summary of Cost Estimates for Municipal System

Category	Cost in Million $
Treatment	105.08
Infiltration/inflow	49.27
New Interceptor Sewers	199.89
New Collector Sewers	192.05
Combined Sewage Pollution Abatement	781.59
Total	1327.88

About 59 percent of the total cost for all the municipalities in ORB relates to combined sewage pollution abatement. Sixty-seven (67) percent of the estimated total cost for all the municipal systems are estimated to be spent in the three plants in Jefferson County. The breakdown of the estimated costs for these three plants are presented here:

Plant	Cost in Million $
1. Louisville: Morris-Forman	611.18
2. Louisville: North County	46.67
3. Louisville: West County	237.30
Total	895.15

Of the one hundred sixty-six (166) domestic wastewater discharges on the tributaries seventy-eight (78) will require post aeration and sixty-five (65) will require advanced treatment in order to meet the water quality standards.

All of the twenty-three (23) industrial discharges will have to upgrade their existing treatment in order to maintain the minimum water quality requirements in the receiving streams.

On the Ohio River main stem, this study indicates that secondary and/or best practicable treatment to all point sources will be adequate to meet the water quality standards. However, where the violations are due to non-point sources, such as acid mine drainage, combined sewage overflows and urban runoff, concerted efforts will be needed to intercept and provide appropriate treatment to these pollution sources prior to discharge into the receiving streams in order to achieve water quality standards in these segments.

Two phases of public participation as required under PL 92-500 have been completed and the final phase will be initiated following completion of the state-wide water quality management plan of which this report on the Ohio River Basin forms a part.

BACKGROUND FOR THE PLAN

INTRODUCTION

The water quality basin planning area for the Ohio River and its minor tributaries within the State of Kentucky extends from the confluence of the Ohio and Big Sandy Rivers near Ashland, Kentucky to the confluence of the Mississippi and the Ohio Rivers near Cairo, Illinois. This basin planning area includes all or parts of 34 counties in the State of Kentucky extending from the Boyd County at the extreme east to the Ballard County at the extreme west. The study area consists of 5,820 square miles, including the drainage areas of the Tradewater River, the Tygarts Creek and the Little Sandy River.

This chapter presents the physiography, and existing and future population, employment, and land use for the study area. Also contained in this chapter are wastewater control methods practiced in the basin, the existing water quality, and the applicable water quality standards of the Commonwealth of Kentucky.

PHYSIOGRAPHY

This section describes the physiographic regions, topography, geology and physiographic provinces, soils, and surface and groundwater in the Ohio River Basin. Each of these features of the basin are briefly discussed below.

Physiographic Regions

There are five physiographic regions in the Ohio River Basin planning area in Kentucky. These are:

1. Jackson Purchase
2. Mississippian Plateau
3. Western Coal Field
4. Blue Grass
5. Eastern Coal Field

Exhibit 3.1m shows the location of each of these physiographic regions in the Ohio River Basin. Exhibit 3.1t lists for each of these regions the topography, drainage characteristics, geology and general groundwater quality.

Topography

The topography of the Ohio River Basin in Kentucky varies from flat and rolling plains to rugged mountains. The highest point, elevation 1,240 feet above mean sea level is in the Little Sandy River basin and the lowest point is at the mouth of the Ohio River at elevation 300 feet.

The eastern portion of the basin covering the Little Sandy River, Tygarts Creek, and Kinniconic Creek falls within the Appalachian Mountains. The ridges here are sharp, the slopes steep, and the valleys narrow. The streams within this region flow parallel to the ridges and in their lower reaches flow normal to the Ohio River. The rest of the basin extending west consists of undulating to rolling hills and plains suitable for agriculture.

Geology and Physiographic Provinces

Rock formations in the Ohio River Basin are nearly all sedimentary, chiefly sandstone, limestone, and shales. They range in age from only a few million years for recent and tertiary deposits at the Ohio River mouth to over 440 million years for the upper Ordovician formations at the Maysville-Covington region. Characteristics of the rock formations were instrumental in forming the basin topographic relief and drainage patterns.

All of the Ohio River Basin lies within three major physiographic provinces: the Appalachian Plateau in the eastern part of the State, the Interior Low Plateau in the central and western part of the State and the Gulf Coastal Plain in the far western part of the State. These physiographic provinces are further divided into physiographic regions as shown in Exhibit 3.1m and are listed in Exhibit 3.1t. These physiographic provinces are briefly described below:

1. Appalachian Plateau

The Appalachian Plateau, which includes the Eastern Coal Field, lies in the eastern portion of the Study Area and extends from the Big Sandy River to just upstream of Maysville, Kentucky and includes the Little Sandy River, Tygarts Creek and Kinniconic Creek watersheds. The area is composed primarily of Pennsylvania sandstone interbedded with numerous coal seams.

2. Interior Low Plateau

The Interior Low Plateau includes 3 regions: The Bluegrass region, the Mississippi Plateau region and the Western Coal Field region. Travelling downstream from the Appalachian Plateau the rock formations decrease in age. The Bluegrass region which lies between Maysville and Louisville is dominated by the Ordovician system of rock. Further downstream from Louisville to the Tennessee River are the Mississippi Plateau and the Western Coal Field composed mostly of rock from the Pennsylvanian System. The Tradewater River is located in the Interior Low Plateau mostly in the Western Coal Field with parts in the Mississippi Plateau.

3. Gulf Coastal Plain

In the western part of the state between the Tennessee and Mississippi Rivers are the youngest rocks in the study area. These young quaternary rocks are found in the Jackson Purchase Physiographic Region and underlie a flat river valley suitable for agricultural and silvicultural activities.

EXHIBIT 3.1t PHYSIOGRAPHIC REGIONS

Physiographic Region	Topography	Drainage		Geology		General Groundwater Quality*		
		Run-Off	Internal	Formation	Type	Hardness (ppm)	Chloride (ppm)	Sulphate (ppm)
1. Jackson Purchase	Undulating to Rolling	Slow-Medium	Slow-Medium	Qr	gr,sd,cl, lo	50-300	2-50	0.1-38
2. Mississippian Plateau	Karst, Undulating	Medium	Medium	M	ls,lo	67-550	10-250	10-350
	Undulating to Hilly	Medium-Rapid	Slow-Medium	M	sa,sh,ls, lo	67-550	10-250	10-350
3. Western Coal Field	Level to Undulating	Very Slow-Slow	Slow	P	sa,sh,lo, al	5-550	3-185	0.2-430
	Rolling, Hilly	Medium-Rapid	Slow-Rapid	P	sa,sh,lo	5-550	3-185	0.2-430
4. Blue Grass	Rolling to Undulating	Medium-Rapid	Medium	uO	ls	50-980	2-340	0.4-520
	Hilly to Rolling	Very Rapid	Slow	uO	ls,sh	50-980	2-340	0.4-520
5. Eastern Coal Field	Rolling, Mountainous	Medium-Rapid	Medium-Slow	P	ls,sh	25-450	2-330	0.2-380
	Hilly	Very Rapid	Medium	P	sa,sh	25-450	2-330	0.2-380
	Mountainous	Rapid	Medium	P	sa,sh	25-450	2-330	0.2-380

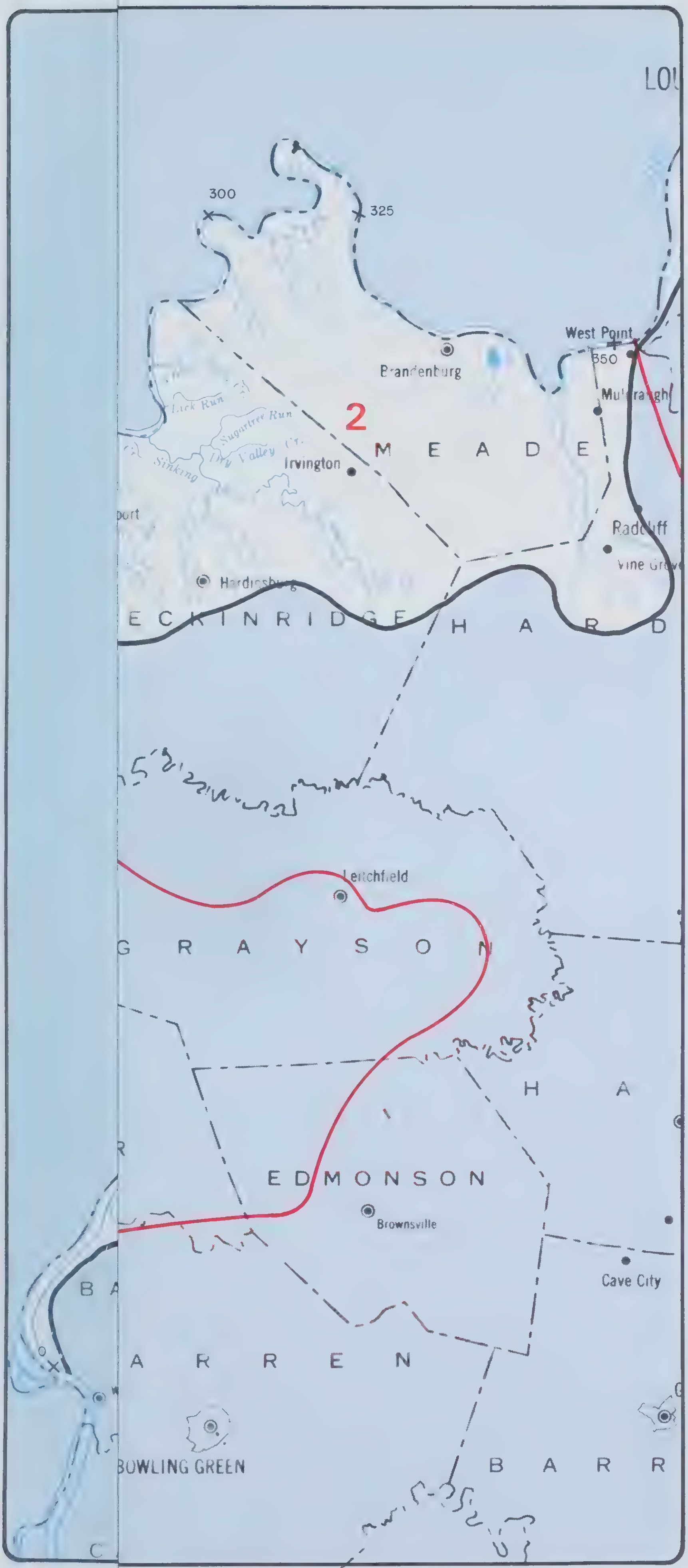
*Hopkins, Herbert T. 1966. Fresh Saline Water Interface Map of Kentucky. Kentucky Geological Survey

LEGEND

GEOLOGY:

Formation: Qr = Quarternary; M = Mississippian; P = Pennsylvanian; uO = upper Ordovician

Type: gr = gravels; sd = sands; cl = clays; lo = loess; ls = limestone; sa = sandstone; sh = shale; al = alluvium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Vine Grove
Hardinsburg
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Brownsville
B A
Cave City
A R R E N
BOWLING GREEN
B A R R
C

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.1m-1

PHYSIOGRAPHIC REGIONS

LEGEND

— - — -	COUNTY OUTLINES
~	STREAMS
▬	BASIN OUTLINE
+ 25	RIVER MILES
~	PHYSIOGRAPHIC REGION OUTLINES

PHYSIOGRAPHIC REGIONS

1	JACKSON PURCHASE REGION
2	MISSISSIPPIAN PLATEAU REGION
3	WESTERN COAL FIELD REGION

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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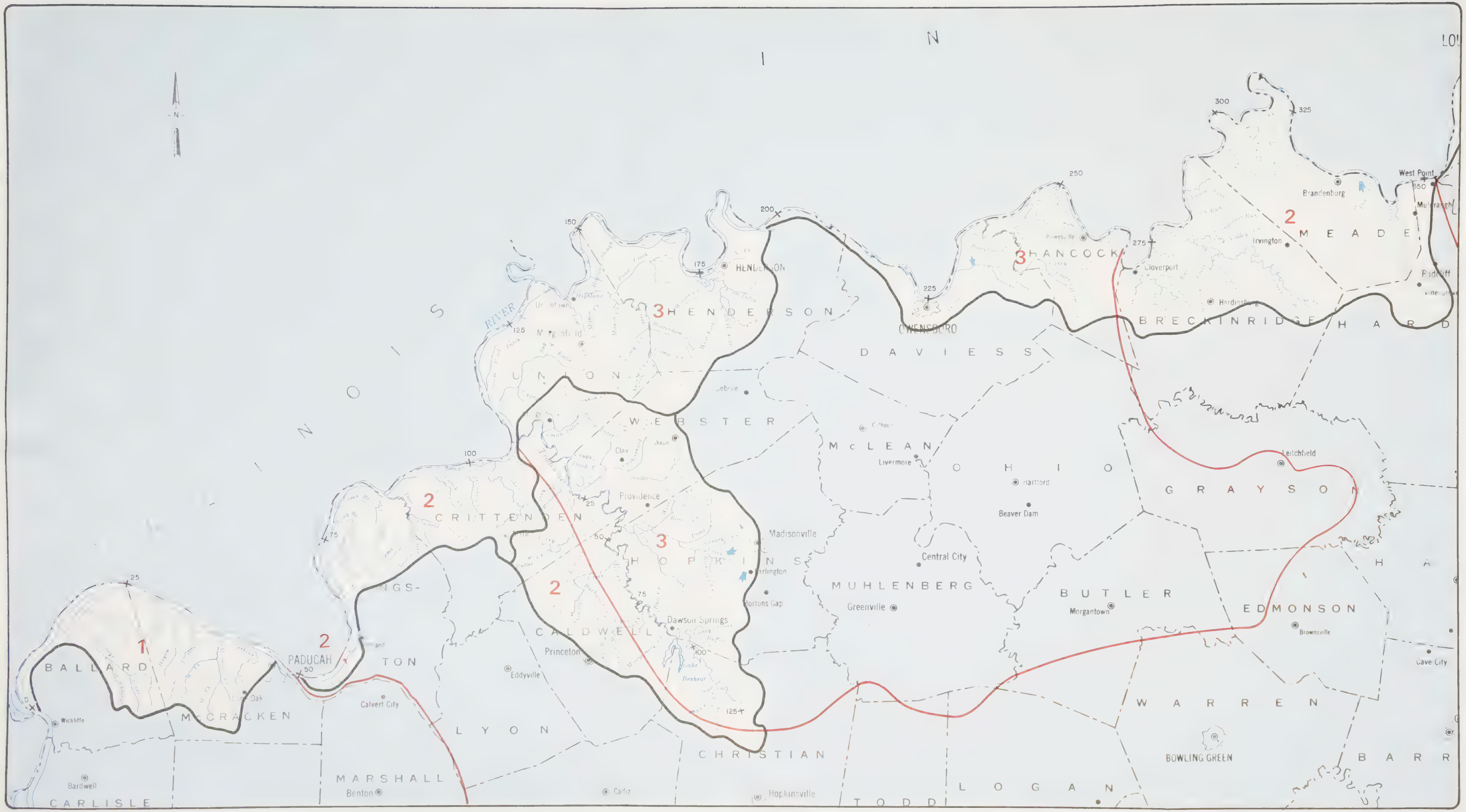
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HENDERSON
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Princeton
Cadiz
Hopkinsville
Morganfield
Uniontown
HENDERSON
Sebree
Dixon
Clay
Providence
Madisonville
Earlington
Nortons Gap
Dawson Springs
Calhoun
Livermore
Hartford
Beaver Dam
Central City
Greenville
Morgantown
OWENSBORO
Hawesville
Cloverport
Hardinsburg
Irvington
Brandenburg
West Point
Muldraugh
Radcliff
Leitchfield
Brownsville
Cave City
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.1m-1

PHYSIOGRAPHIC REGIONS

LEGEND

- - - COUNTY OUTLINES

STREAMS

BASIN OUTLINE

+25 RIVER MILES

PHYSIOGRAPHIC REGION OUTLINES

PHYSIOGRAPHIC REGIONS

1	JACKSON PURCHASE REGION
2	MISSISSIPPIAN PLATEAU REGION
3	WESTERN COAL FIELD REGION

5
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20
GRAPHIC SCALE IN MILES

Base from U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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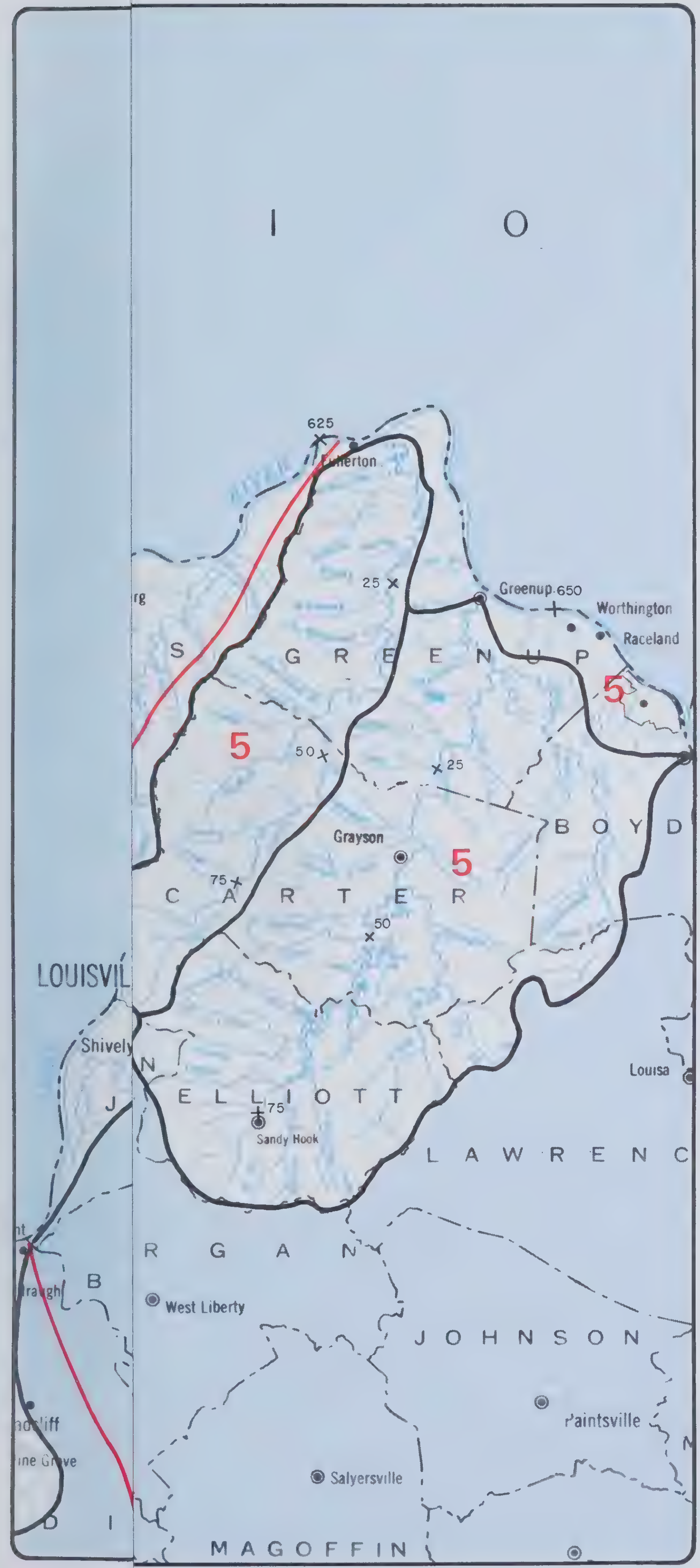
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

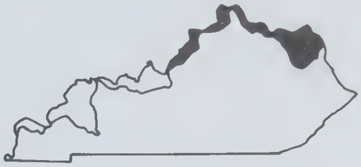

EXHIBIT 3.1m-2

PHYSIOGRAPHIC REGIONS

LEGEND

— · — · —	COUNTY OUTLINES
	STREAMS
━━━	BASIN OUTLINE
+ 25	RIVER MILES
	PHYSIOGRAPHIC REGION OUTLINES

PHYSIOGRAPHIC REGIONS

4	BLUE GRASS REGION
5	EASTERN COAL FIELD REGION

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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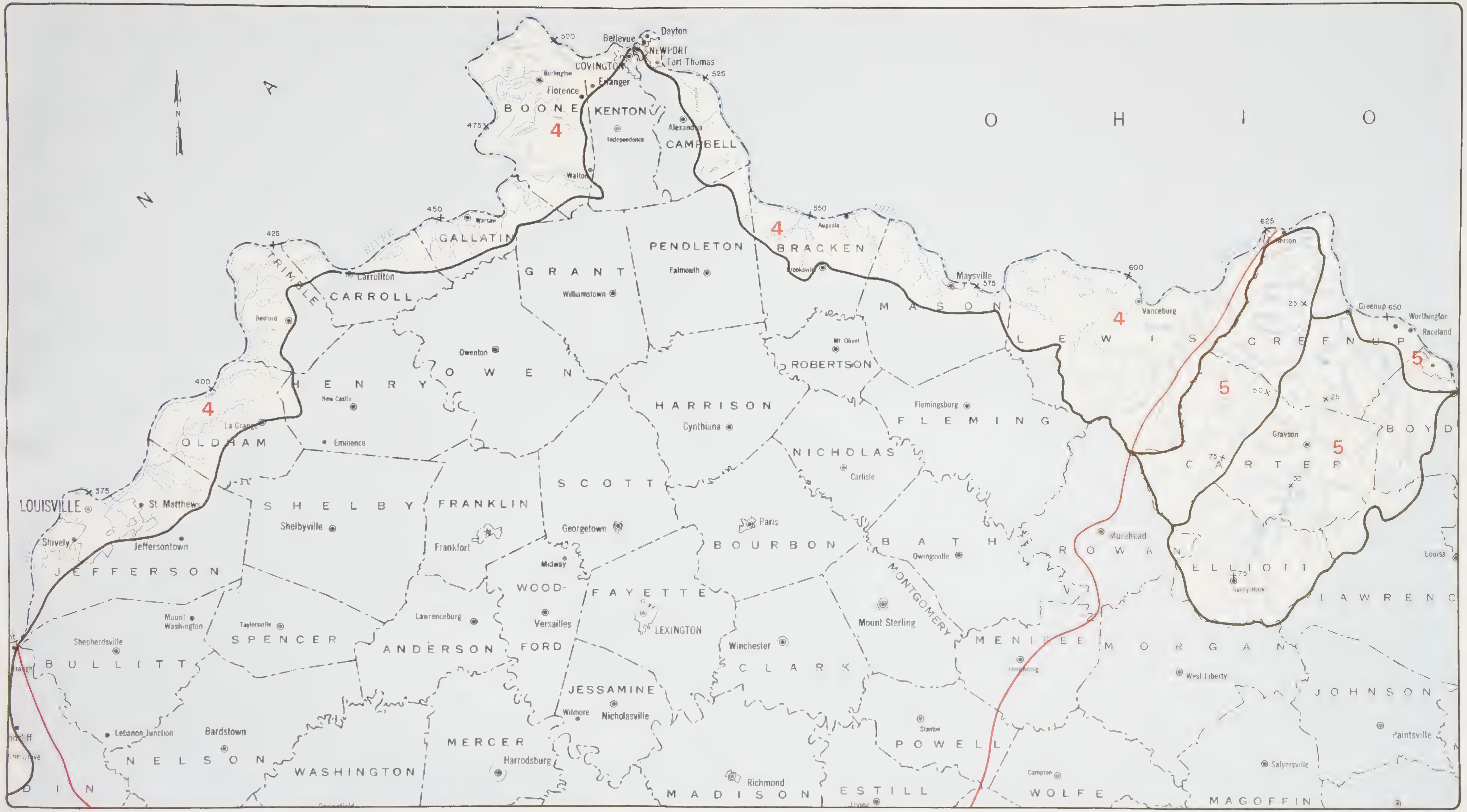
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GALLATIN
TRIMBLE
CARROLL
GRANT
PENDLETON
BRACKEN
MASON
LEWIS
GREENUP
BOYD
CARTER
ELLIOTT
LAWRENCE
ROBERTSON
FLEMING
HARRISON
NICHOLAS
OWEN
HENRY
OLDHAM
SHELBY
FRANKLIN
SCOTT
BOURBON
BATH
ROWAN
JEFFERSON
SPENCER
ANDERSON
WOODFORD
FAYETTE
CLARK
MONTGOMERY
MENIFEE
MORGAN
JOHNSON
BULLITT
NELSON
WASHINGTON
MERCER
JESSAMINE
MADISON
ESTILL
POWELL
WOLFE
MAGOFFIN
LOUISVILLE
St. Matthews
Shively
Jeffersontown
Dayton
Bellevue
NEWPORT
Fort Thomas
COVINGTON
Burlington
Florence
Erlanger
Independence
Alexandria
Walton
Warsaw
Carrollton
Bedford
La Grange
New Castle
Eminence
Owenton
Williamstown
Falmouth
Augusta
Brooksville
Maysville
Mt. Olivet
Vanceburg
Fullerton
Greenup
Worthington
Raceland
Grayson
Flemingsburg
Cynthiana
Carlisle
Paris
Owingsville
Morehead
Sandy Hook
Louisa
Shelbyville
Frankfort
Georgetown
Midway
Versailles
Lawrenceburg
LEXINGTON
Winchester
Mount Sterling
Frenchburg
West Liberty
Paintsville
Salyersville
Stanton
Campton
Irvine
Richmond
Nicholasville
Wilmore
Harrodsburg
Bardstown
Lebanon Junction
Shepherdsville
Mount Washington
Taylorsville
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.1m-2

PHYSIOGRAPHIC REGIONS

LEGEND

— · — · —	COUNTY OUTLINES
≈	STREAMS
━━━	BASIN OUTLINE
+ 25	RIVER MILES
—	PHYSIOGRAPHIC REGION OUTLINES

PHYSIOGRAPHIC REGIONS

4	BLUE GRASS REGION
5	EASTERN COAL FIELD REGION

5 0 10 20

GRAPHIC SCALE IN MILES

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC.

Boston New York Palo Alto Chicago

Soils

An inventory of the soils in the study area is made for the purpose of evaluating 1) the suitability of waste disposal either through a septic tank absorption field system or a land application system and to determine 2) the potential for sediment runoff as a non-point source pollutant. In order to accomplish this soils analysis Exhibit 3.3m is prepared with all the soil associated throughout the study area listed by numbers. General soil maps for Area Development Districts, prepared by U.S. Department of Agriculture, are the main source of data for compiling Exhibit 3.3m. Details of soil classifications are presented in Exhibit 3.2t and supplements the Exhibit 3.3m. It includes the following:

1. Map Number. Soil association numbers corresponding to the numbers on Exhibit 3.3m used as an identification for each soil category.

2. Soil Association. List of the major soil series within each soil association. These major soil series data are derived from the ADD soil maps.

3. Percent of Association. Percent of each soil series in the association as obtained from the ADD soil reports.

4. Dominant Slope (Percent). Range of slopes found in each soil series. These are also obtained from the ADD soil reports.

5. Septic Tank Absorption Field. A rating of each soil series as to suitability for construction of septic tanks with absorption fields ranging from slight limitations to severe limitations based on percolation, slope, shallow depth and flooding. This information is taken from the "Soil Interpretation for Town and County Planning."

6. Land Application of Wastewater. A rating of each soil series as to its suitability for land application of wastewater.

7. Hydrologic Soil Group. The hydrologic soil group divides the soil series on the basis of infiltration rates and runoff potential. There are four categories from high (classified as A) to very slow (classified as D) infiltration. This information was obtained from the State of Kentucky Hydrologic Soil Group Table.

8. Potential Sediment Runoff. Each soil series is classified as having either low, medium, or high potential for sediment runoff based on dominant slopes and hydrologic soil group. The interpretation of the three categories are based on criteria given below:

Potential Sediment Runoff	Hydrologic Soils Group	Slope
Low	A and B	Less than 6%
Medium	C	6-20%
High	D	Steeper than 20%

In cases where the Hydrologic Soil group and slope differ in degree the most severe sediment runoff condition is to be chosen. For example, a soil with a hydrologic soil group of B and dominant slope of 35 to 50 percent is classified as having high potential for sediment runoff.

Surface and Groundwater

Precipitation, including snowfall, averages about 44 inches annually in the Ohio River Basin. Precipitation is usually greatest in June or July and least in October. Average seasonal variation is small. However, there may be considerable variation from one month to another within a year and for the same month from one year to the next.

Stream runoff normally follows a marked seasonal pattern. Depending on location, geology, and topography, there is considerable variation in the average annual runoff. During late winter and spring average monthly runoff is high with the maximum usually in January. About 50 percent of the streamflow usually occurs in the four months, January through April. The low flow occurs from late summer through October. The average annual runoff in the Ohio River Basin ranges between 15 and 20 inches. Most minor tributary streams throughout the basin normally cease flowing during the dry season. Streamflow from precipitation is often negligible during late summer and early fall, the only flow being from groundwater seepage. Exhibit 3.4m illustrates the perrenial streams (streams with low flow greater than zero) and primary and secondary monitoring stations in the Ohio River Basin.

Moderate to plentiful groundwater supplies are available throughout most of the glacial tills and the alluvial valleys that stretches along the Ohio River main stem. Although somewhat limited in areal extent, the permeable sands and gravel deposits in the valleys are sources of high yield with individual wells commonly yielding 100 or more gpm.

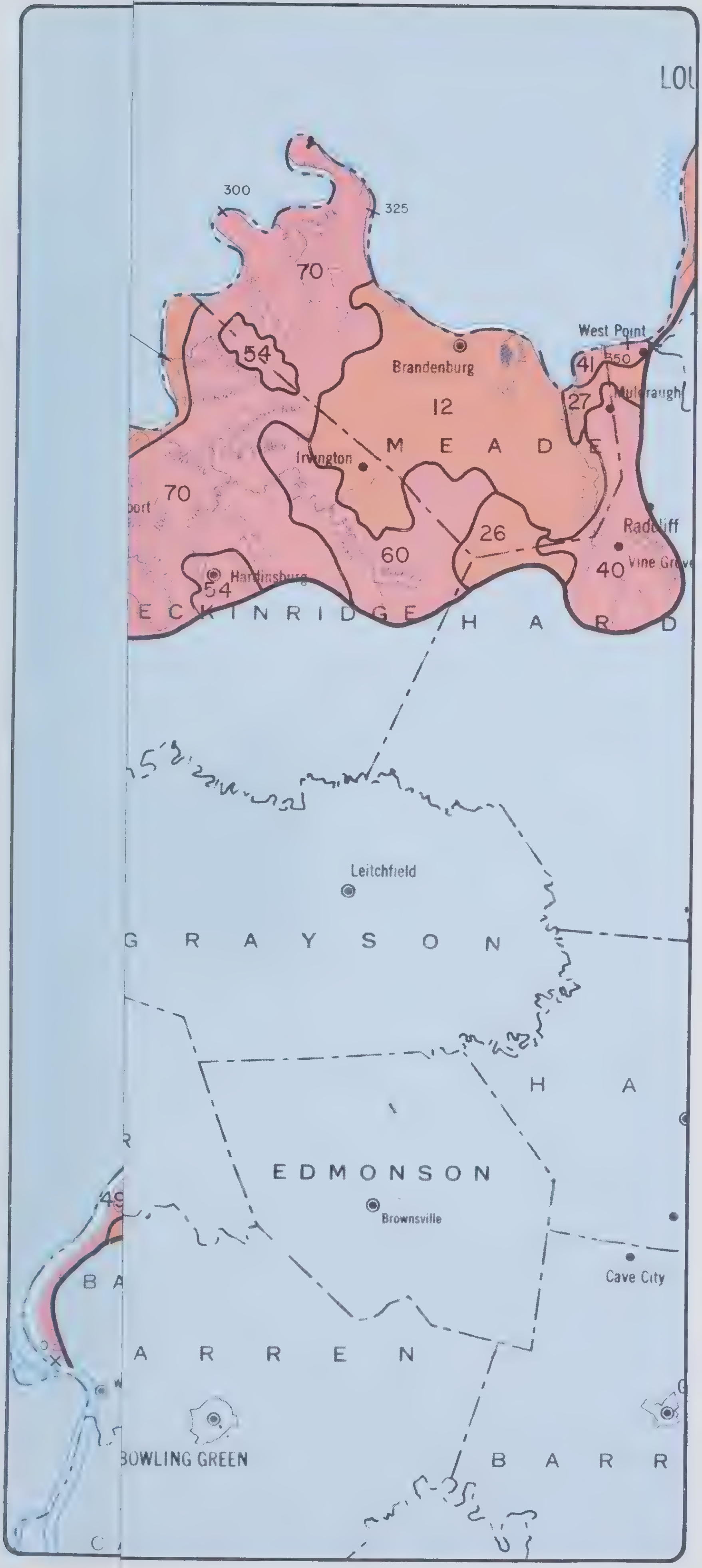
Bedrock formations underlying the Ohio River Basin vary greatly in their hydrologic characteristics. Bedrock formations (Mississippian limestones) in the Gulf Coastal Plain are capable of high yields. Mississippian limestone formations in the interior low plateau downstream from Louisville are capable of producing moderate yields (between 20 and 100 gpm). In the non-glaciated areas where the Ordovician formations of the Cincinnati arch form the surface, sources of groundwater supply is meager. Individual wells in this area commonly yield less than 20 gpm.

POPULATION

Past population for the years 1960 and 1970 and projected population for the years 1975, 1980, and 1995 in the Ohio River Basin and in each county in the basin are presented in Exhibit 3.5t. The total and percent changes in population between the years 1960-70, 1970-75, 1975-80, and 1980-95 are also presented in this table. The population in the Ohio River Basin and in each county or part of a county in the basin are divided into two categories: urban and rural. All incorporated places with population of 2500 and over are considered to be urban. Population other than urban are considered rural. Rural population are further classified into non-farm and farm. Incorporated places with less than 2500 people are considered as non-farm. All other rural population are considered as farm population.

EXHIBIT 3.2t SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
1	Allegheny	35	2-20	Slight	Slight	B	Medium
	Nolichucky	20	6-12	Moderate (S)	Severe (P)	B	Medium
	Zanesville	15	2-12	Severe (P)	Severe (P)	C	Medium
2	Baxter	32	6-20	Moderate (P,S)	Slight	B	Medium
	Crider	31	0-6	Slight	Slight	B	Low
3	Baxter	36	6-20	Moderate (P,S)	Slight	B	Medium
	Loring	16	2-12	Severe (P)	Moderate (P)	C	Medium
	Memphis	12	2-30	Slight	Severe (S)	B	High
4	Beasley	40	2-12	Severe (P)	Moderate (P)	C	Medium
	Hagerstown	35	2-12	Moderate (D,S)	Slight	B	Medium
	Mercer	10	0-6	Severe (P)	Severe (P)	C	Medium
5	Beasley	35	6-12	Severe (P)	Moderate (P)	C	Medium
	Nicholson	22	2-6	Severe (P)	Severe (P)	C	Medium
	Fairmount	20	20-30	Severe (S)	Severe (LWC,S)	D	High
6	Berks	50	30-50	Severe (S)	Severe (S)	B	High
	Cranston	40	30-50	Severe (S)	Severe (S)	B	High
7	Brandon	31	6-30	Severe (S)	Severe (S)	B	High
	Loring	25	2-20	Severe (P,S)	Moderate (P)	C	Medium
8	Calloway	50	Nearly level	Severe (P,W)	Severe (P,W)	C	Medium
	Henry	18	0-2	Severe (P,W)	Severe (P,W)	D	High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Brandenburg
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Irvington
West Point
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Muldraugh
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Radcliff
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Vine Grove
60
Hardinsburg
54
70
port
ECKINRIDGE
H A R D
Leitchfield
G R A Y S O N
H A
EDMONSON
Brownsville
Cave City
49
B A
A R R E N
BOWLING GREEN
B A R R
C

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.3m-1

SOIL INTERPRETATION

LEGEND

— · — ·	COUNTY OUTLINES
～	STREAMS
—	BASIN OUTLINE
+ 25	RIVER MILES
68	SOIL ASSOCIATION NUMBER
∼	SOIL ASSOCIATION BOUNDARIES

INTERPRETATION FOR SEPTIC TANK ABSORPTION FIELDS

🟨	SLIGHT LIMITATION
🟧	MODERATE LIMITATION
🟥	SEVERE LIMITATION

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
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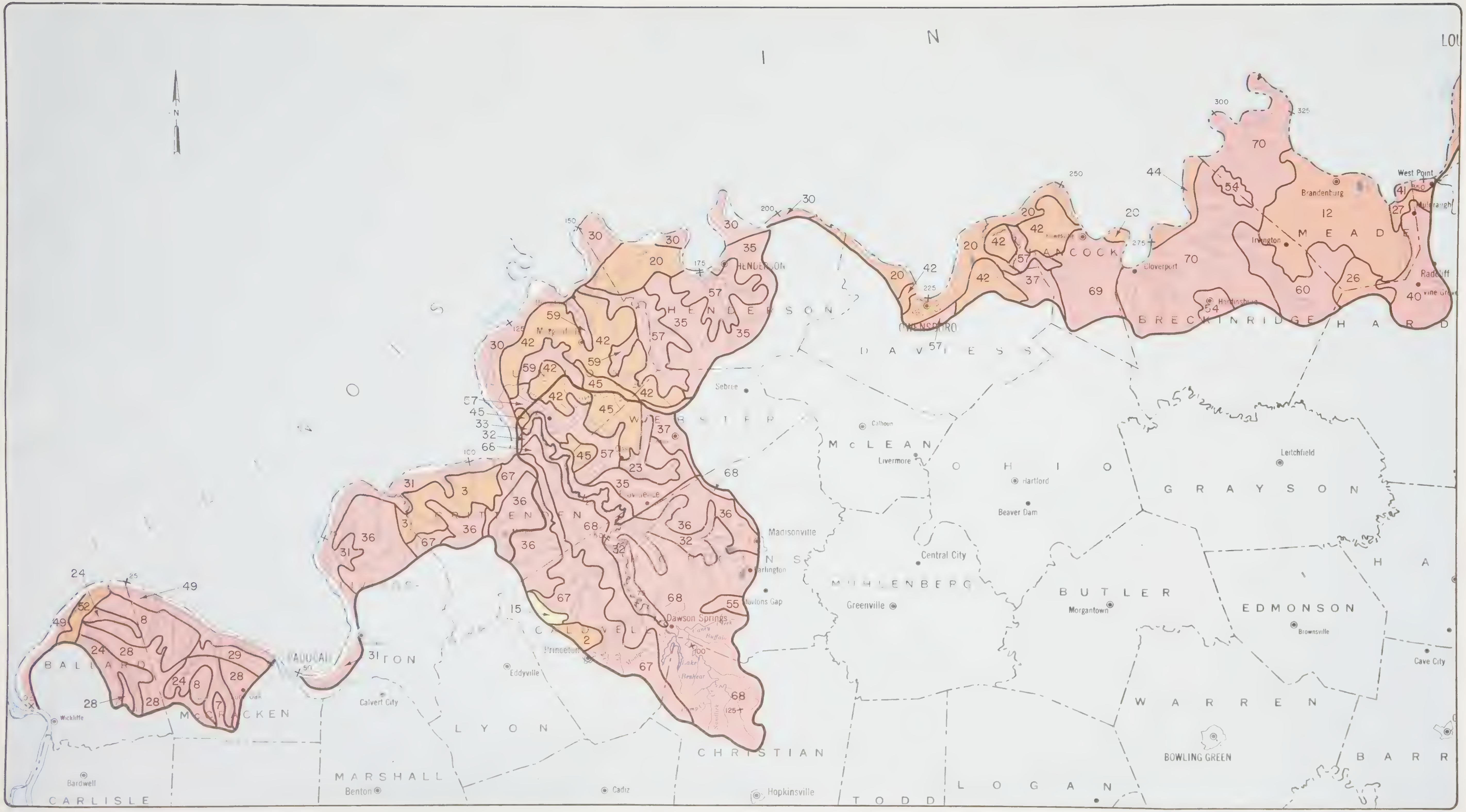
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WARREN
LOGAN
TODD
CHRISTIAN
LYON
MARSHALL
LIVINGSTON
BALLARD
McCRACKEN
CARLISLE
BARR
HA
Henderson
Owensboro
Sebree
Calhoun
Livermore
Hartford
Beaver Dam
Central City
Greenville
Madisonville
Earlington
Nortons Gap
Dawson Springs
Princeton
Eddyville
Calvert City
Benton
Cadiz
Hopkinsville
Morgantown
Leitchfield
Brownsville
Cave City
Bowling Green
Cloverport
Hardinsburg
Irvington
Brandenburg
West Point
Muldraugh
Radcliff
Vine Grove
Paducah
Wickliffe
Bardwell
Lone Oak
Hawesville
Marion
Dixon
Providence
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150
175
200
225
250
275
300
325
125
100
75
50
25
650

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.3m-1

SOIL INTERPRETATION

LEGEND

- · - · -	COUNTY OUTLINES
~~	STREAMS
———	BASIN OUTLINE
+	RIVER MILES
68	SOIL ASSOCIATION NUMBER
∼∼	SOIL ASSOCIATION BOUNDARIES

INTERPRETATION FOR SEPTIC TANK ABSORPTION FIELDS

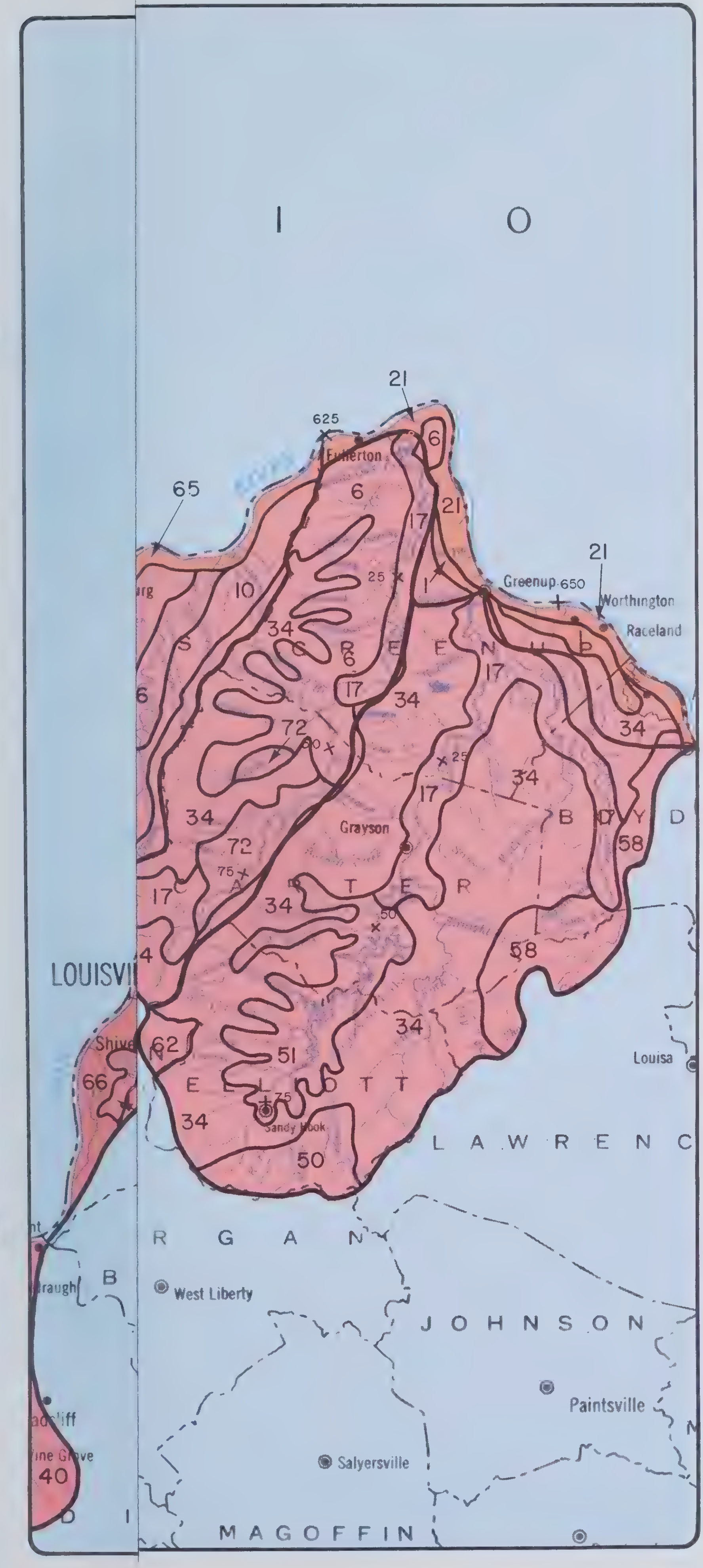
▭	SLIGHT LIMITATION
▭	MODERATE LIMITATION
▭	SEVERE LIMITATION

5
0
10
20
GRAPHIC SCALE IN MILES

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago


I O
21
625
Fullerton
6
65
21
17
10
25
1
Greenup 650
21
Worthington
Raceland
34
G R E E N U P
6
17
34
17
34
72
60
25
34
17
34
B O Y D
Grayson
72
75
17
C A R T E R
34
50
58
58
LOUISVI
34
62
Shive
51
66
E L L I O T T
75
Louisa
34
Sandy Hook
50
L A W R E N C
R G A N
B
West Liberty
J O H N S O N
Paintsville
Salyersville
40
M A G O F F I N

OHIO RIVER BASIN AND MINOR TRIBUTARIES

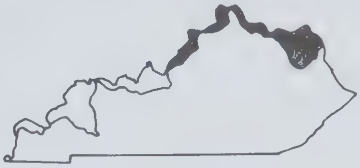


EXHIBIT 3.3m-2

SOIL INTERPRETATION

LEGEND

- - - - COUNTY OUTLINES

STREAMS

BASIN OUTLINE

+ 25 RIVER MILES

34 SOIL ASSOCIATION NUMBER

SOIL ASSOCIATION BOUNDARIES

INTERPRETATION FOR SEPTIC TANK ABSORPTION FIELDS

SLIGHT LIMITATION

🟧 MODERATE LIMITATION

🟥 SEVERE LIMITATION

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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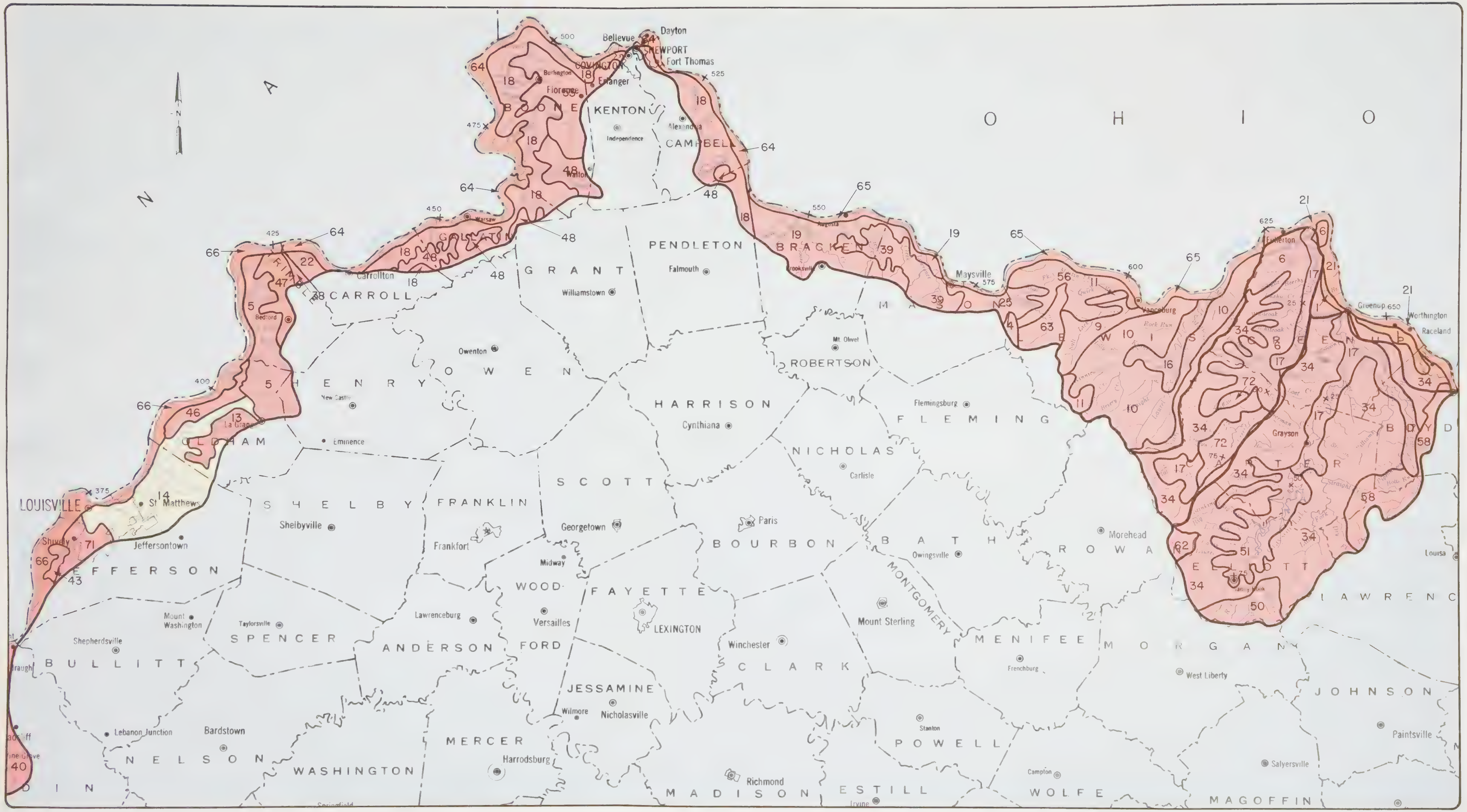
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INDIANA
OHIO
LOUISVILLE
St Matthews
Shively
Jeffersontown
JEFFERSON
OLDHAM
La Grange
HENRY
New Castle
Eminence
CARROLL
Carrollton
TRIMBLE
Bedford
GALLATIN
Warsaw
BOONE
Burlington
Florence
Erlanger
Walton
KENTON
Independence
COVINGTON
Bellevue
Dayton
NEWPORT
Fort Thomas
CAMPBELL
Alexandria
GRANT
Williamstown
PENDLETON
Falmouth
BRACKEN
Augusta
Brooksville
MASON
Maysville
ROBERTSON
Mt Olivet
LEWIS
Vanceburg
GREENUP
Fullerton
Greenup
Worthington
Raceland
BOYD
CARTER
Grayson
ELLIOTT
Sandy Hook
LAWRENCE
Louisa
OWEN
Owenton
HARRISON
Cynthiana
FLEMING
Flemingsburg
NICHOLAS
Carlisle
SHELBY
Shelbyville
FRANKLIN
Frankfort
SCOTT
Georgetown
BOURBON
Paris
BATH
Owingsville
ROWAN
Morehead
WOODFORD
Versailles
Midway
FAYETTE
LEXINGTON
MONTGOMERY
Mount Sterling
MENIFEE
Frenchburg
MORGAN
West Liberty
JOHNSON
Paintsville
SPENCER
Taylorsville
Mount Washington
ANDERSON
Lawrenceburg
CLARK
Winchester
JESSAMINE
Nicholasville
Wilmore
MERCER
Harrodsburg
POWELL
Stanton
WOLFE
Campton
MAGOFFIN
Salyersville
BULLITT
Shepherdsville
Lebanon Junction
NELSON
Bardstown
WASHINGTON
Springfield
MADISON
Richmond
ESTILL
Irvine
HARDIN
Radcliff
Vine Grove
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 3.3m-2

SOIL INTERPRETATION

LEGEND

- · - · -	COUNTY OUTLINES
~	STREAMS
━	BASIN OUTLINE
+ 25	RIVER MILES
34	SOIL ASSOCIATION NUMBER
〰	SOIL ASSOCIATION BOUNDARIES

INTERPRETATION FOR SEPTIC TANK ABSORPTION FIELDS

🟨	SLIGHT LIMITATION
🟧	MODERATE LIMITATION
🟥	SEVERE LIMITATION

5 0 10 20
GRAPHIC SCALE IN MILES

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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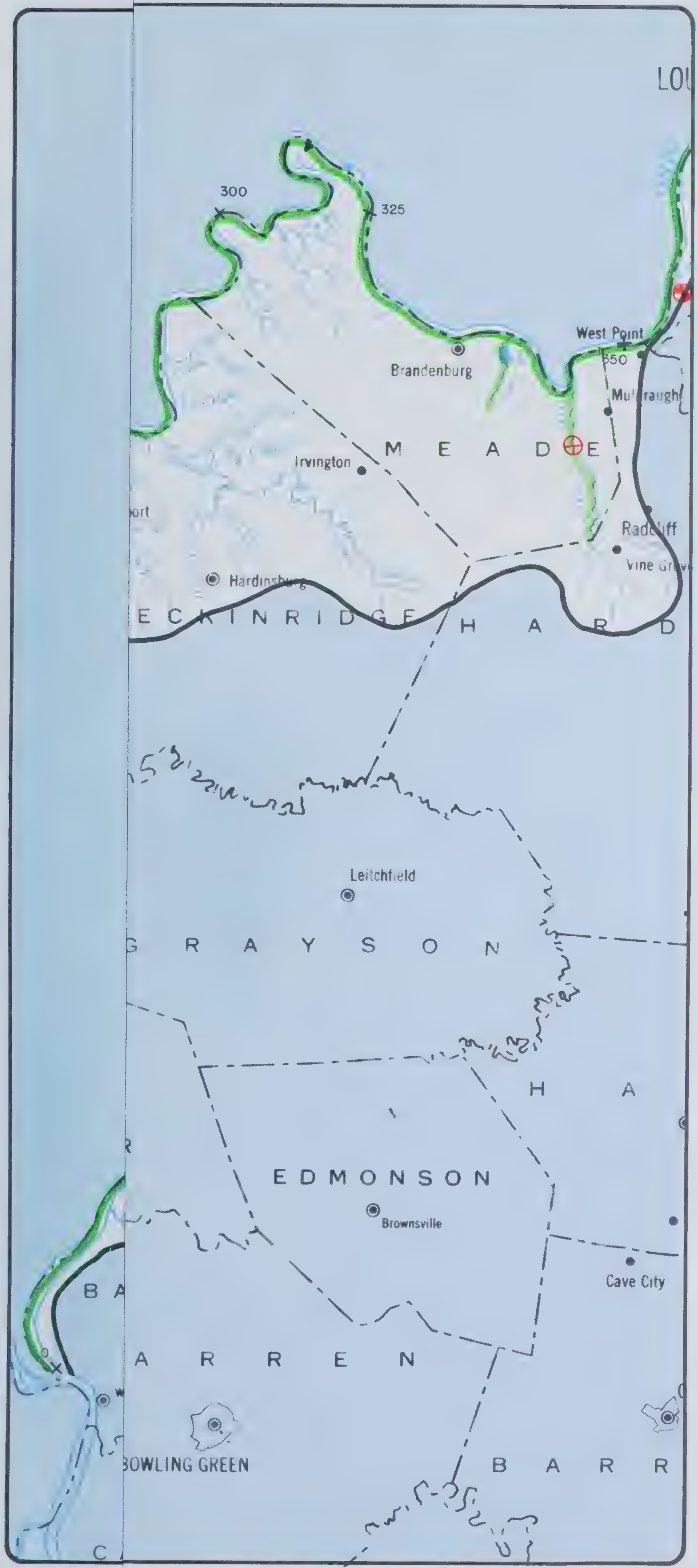
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Brandenburg
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Hardinsburg
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Leitchfield
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Brownsville
Cave City
B A
A R R E N
BOWLING GREEN
B A R R
C

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.4m-1

STREAM FLOW CHARACTERISTICS

LEGEND

— · — · COUNTY OUTLINES

~ STREAMS

— BASIN OUTLINE

+ 25 RIVER MILES

STREAM FLOW CHARACTERISTICS

🟩 0.1 — 1.0 cfs

🟩 1.0 — 10.0 cfs

🟩 GREATER THAN 10 cfs

MONITORING STATIONS

◕ PRIMARY STATIONS

⊕ SECONDARY STATIONS

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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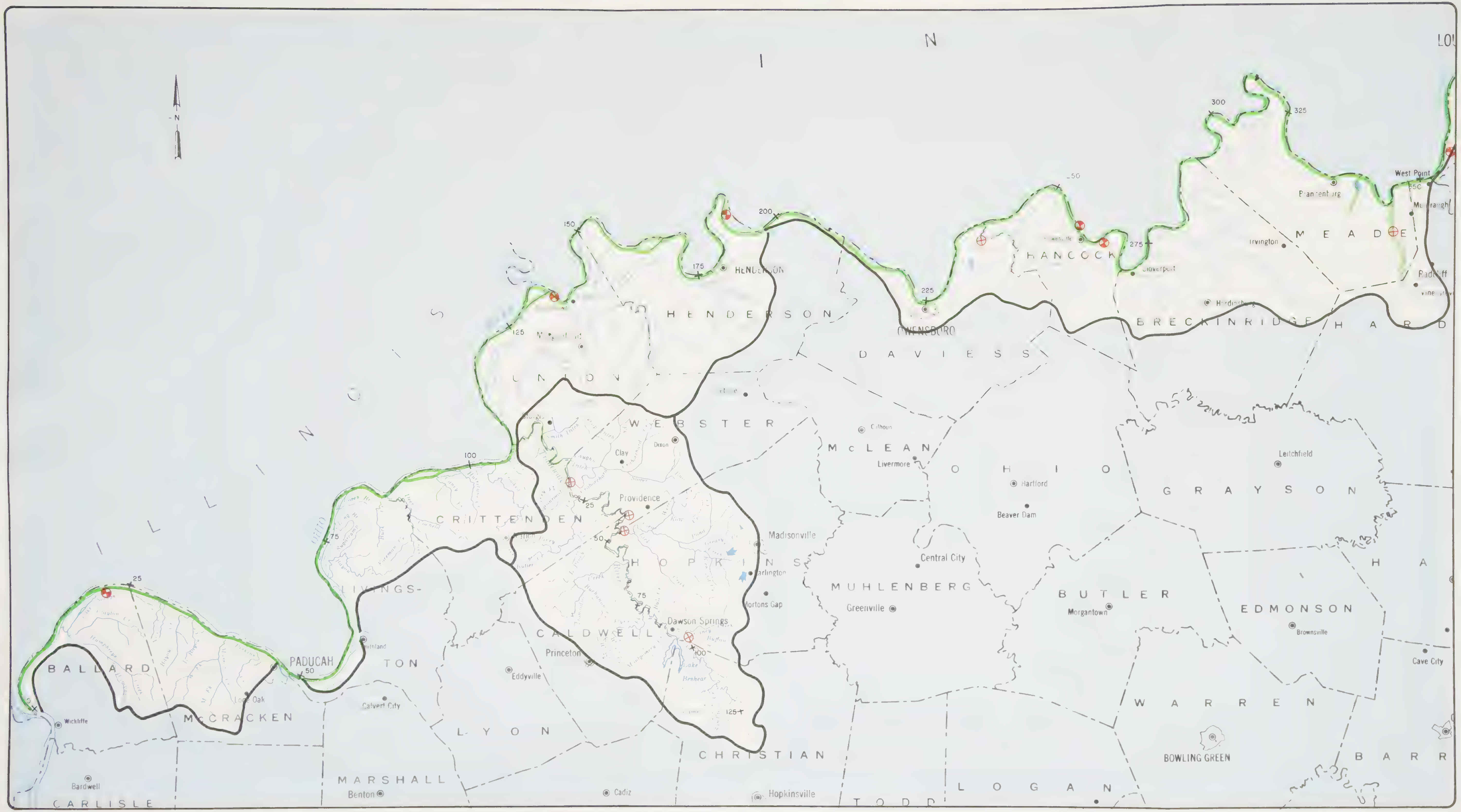
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Morganfield
U N I O N
H E N D E R S O N
W E B S T E R
Clay
Dixon
Providence
CRITTENDEN
Marion
H O P K I N S
Madisonville
Earlington
Mortons Gap
Dawson Springs
Lake Beshear
C A L D W E L L
Princeton
LIVINGS-TON
Smithland
PADUCAH
B A L L A R D
Wickliffe
McCRACKEN
Lone Oak
Bardwell
C A R L I S L E
Calvert City
Eddyville
L Y O N
M A R S H A L L
Benton
Cadiz
C H R I S T I A N
Hopkinsville
T O D D
OWENSBORO
D A V I E S S
McLEAN
Calhoun
Livermore
O H I O
Hartford
Beaver Dam
Central City
M U H L E N B E R G
Greenville
B U T L E R
Morgantown
H A N C O C K
Hawesville
Cloverport
B R E C K I N R I D G E
Hardinsburg
Irvington
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Brandenburg
West Point
Muldraugh
Radcliff
Vine Grove
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

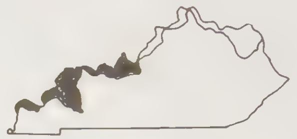

EXHIBIT 3.4m-1

STREAM FLOW CHARACTERISTICS

LEGEND

— - - -	COUNTY OUTLINES
	STREAMS
▬	BASIN OUTLINE
+ 25	RIVER MILES

STREAM FLOW CHARACTERISTICS

	0.1 — 1.0 cfs
🟩	1.0 — 10.0 cfs
🟩	GREATER THAN 10 cfs

MONITORING STATIONS

●	PRIMARY STATIONS
⊕	SECONDARY STATIONS

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
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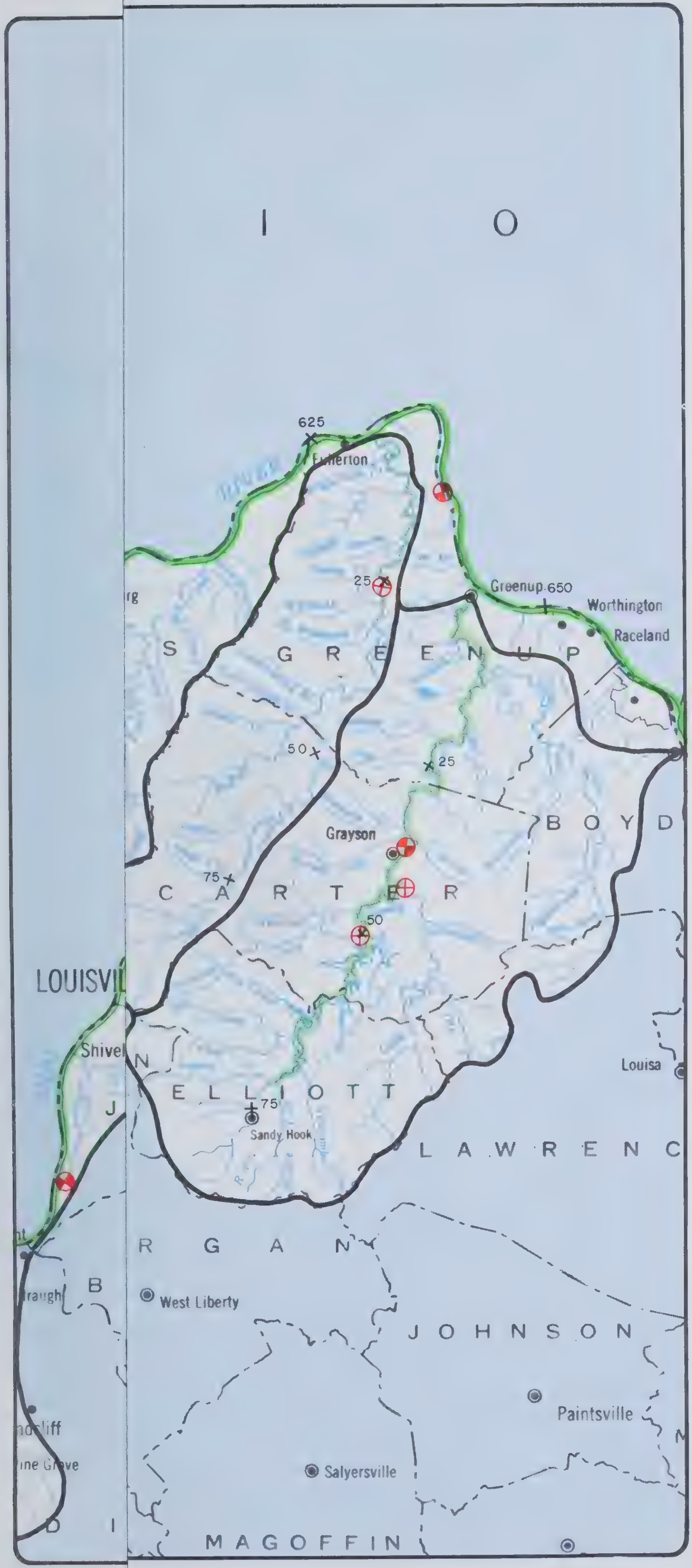
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RIVER
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Greenup 650
Worthington
Raceland
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BOYD
Grayson
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CARTER
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LOUISVI
Shive
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ELLIOTT
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Sandy Hook
LAWRENC
Louisa
RGAN
B
raugh
West Liberty
JOHNSON
Paintsville
Salyersville
MAGOFFIN
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I

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.4m-2

STREAM FLOW CHARACTERISTICS

LEGEND

— · — · —	COUNTY OUTLINES
〰	STREAMS
━━━	BASIN OUTLINE
+	RIVER MILES

STREAM FLOW CHARACTERISTICS

──	0.1 — 1.0 cfs
──	1.0 — 10.0 cfs
🟩	GREATER THAN 10 cfs

MONITORING STATIONS

◕	PRIMARY STATIONS
⊕	SECONDARY STATIONS

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

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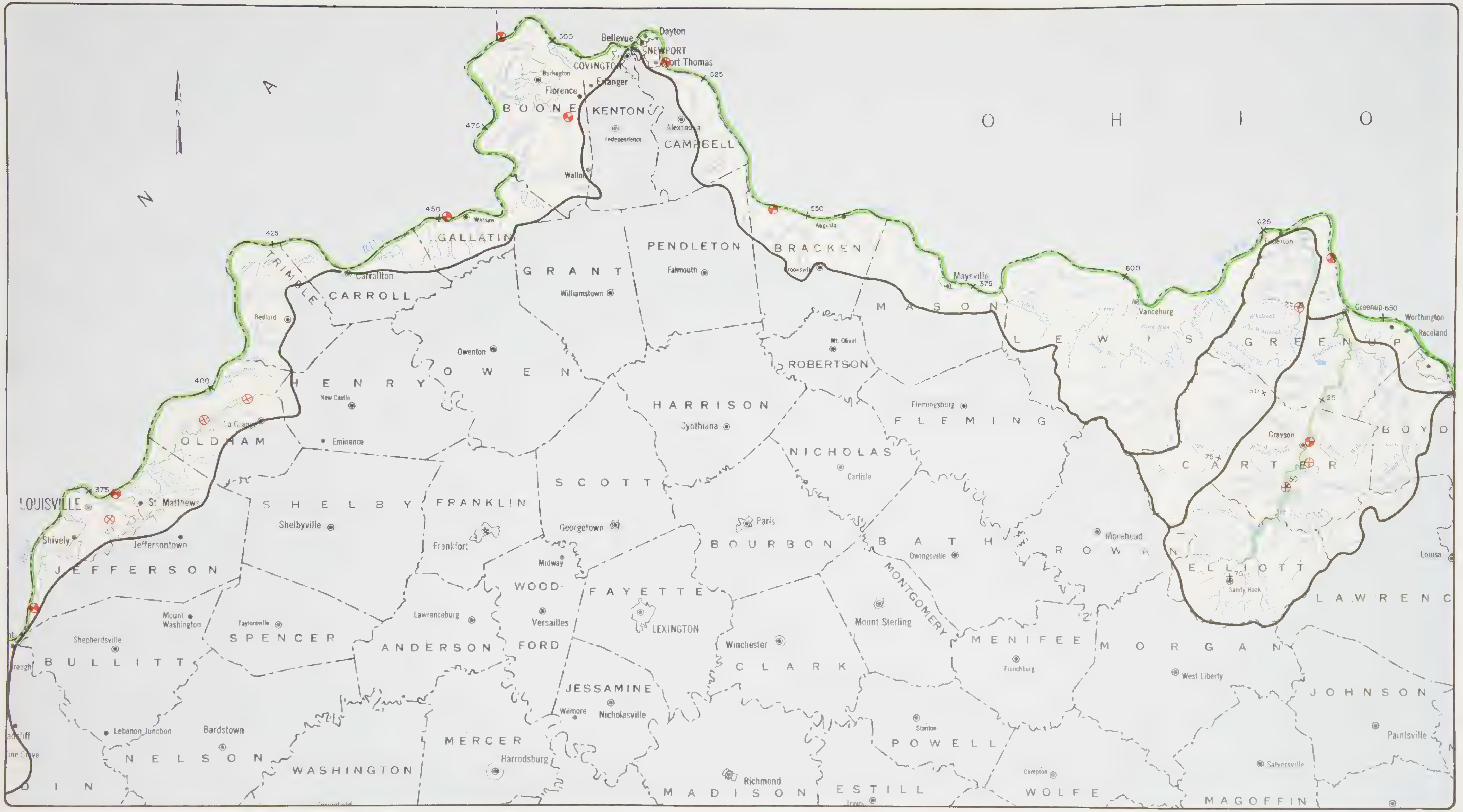
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Independence
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Warsaw
GALLATIN
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TRIMBLE
Carrollton
CARROLL
Bedford
GRANT
Williamstown
PENDLETON
Falmouth
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Augusta
BRACKEN
Brooksville
Maysville
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MASON
Vanceburg
LEWIS
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Fullerton
GREENUP
Greenup 650
Worthington
Raceland
Mt. Olivet
ROBERTSON
Owenton
OWEN
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HENRY
New Castle
La Grange
OLDHAM
Eminence
HARRISON
Cynthiana
Flemingsburg
FLEMING
NICHOLAS
Carlisle
Grayson
CARTER
BOYD
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LOUISVILLE
375
St Matthews
Shively
Jeffersontown
JEFFERSON
SHELBY
Shelbyville
FRANKLIN
Frankfort
SCOTT
Georgetown
Paris
BOURBON
BATH
Owingsville
ROWAN
Morehead
ELLIOTT
Sandy Hook
Louisa
LAWRENCE
Midway
WOODFORD
Versailles
FAYETTE
LEXINGTON
Lawrenceburg
ANDERSON
Mount Washington
Taylorsville
SPENCER
Shepherdsville
BULLITT
MONTGOMERY
Mount Sterling
Winchester
CLARK
MENIFEE
Frenchburg
MORGAN
West Liberty
JOHNSON
Paintsville
JESSAMINE
Wilmore
Nicholasville
MERCER
Harrodsburg
Lebanon Junction
Bardstown
NELSON
WASHINGTON
Springfield
Richmond
MADISON
Irvine
ESTILL
Stanton
POWELL
Campton
WOLFE
Salyersville
MAGOFFIN

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 3.4m-2

STREAM FLOW CHARACTERISTICS

LEGEND

— · — · —	COUNTY OUTLINES
~~	STREAMS
━━━	BASIN OUTLINE
+	RIVER MILES

STREAM FLOW CHARACTERISTICS

───	0.1 — 1.0 cfs
───	1.0 — 10.0 cfs
━━━	GREATER THAN 10 cfs

MONITORING STATIONS

◓	PRIMARY STATIONS
⊕	SECONDARY STATIONS

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC
Boston New York Palo Alto Chicago

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank(1) Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic(2) Soil Group	Potential Sediment(3) Run-Off
9	Colyer	32	20-60	Severe (D,S)	Severe (LWC,S)	D	High
	Trappist	29	12-20	Severe (D,P,S)	Moderate (P)	C	Medium
	Muse	25	6-30	Severe (P,S)	Severe (S)	C	High
10	Cranston	50	20-50	Severe (S)	Severe (S)	B	High
	Berks	47	20-60	Severe (S)	Severe (S)	B	High
11	Cranston	32	30-50	Severe (S)	Severe (S)	B	High
	Berks	25	20-60	Severe (S)	Severe (S)	B	High
	Wharton	20	6-20	Severe (P)	Severe (P)	C	Medium
12	Crider	25	2-12	Slight	Slight	B	Medium
	Baxter	22	6-20	Moderate (P)	Slight	B	Medium
	Caneyville	12	12-20	Severe (D,P,S)	Moderate (P)	C	Medium
13	Crider	34	2-6	Slight	Slight	B	Low
	Beasley	30	6-12	Severe (P)	Moderate (P)	C	Medium
	Corydon	16	12-30	Severe (D,P,S)	Severe (S)	C	High
14	Crider	70	0-12	Slight	Slight	B	Medium
	Corydon	15	12-30	Severe (D,P,S)	Severe (S)	C	High
15	Crider	35	0-6	Slight	Slight	B	Low
	Pembroke	28	0-6	Slight	Slight	B	Low
	Bedford	16	0-6	Severe (P)	Severe (P)	C	Medium

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope (%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
16	Cuba	17	0-4	Severe (F)	Severe (F)	B	Low
	Morehead	13	0-4	Severe (W)	Slight	C	Medium
	Tyler	11	0-4	Severe (P,W)	Severe (P,W)	D	High
17	Cuba	22	0-4	Severe (F)	Severe (F)	B	Low
	Whitely	20	2-6	Moderate (D)	Slight	B	Low
	Morehead	18	0-4	Severe (W)	Slight	C	Medium
18	Eden	95	12-30	Severe (P,S)	Severe (S)	C	High
	Brashear	1	2-20	Severe (P)	Moderate (P)	C	Medium
	Heitt	1	6-12	Severe (P)	Severe (P)	C	Medium
19	Eden	85	12-30	Severe (P,S)	Severe (S)	C	High
	Lowell	5	2-12	Severe (P)	Moderate (P)	C	Medium
	Brashear	5	2-20	Severe (P)	Moderate (P)	C	Medium
20	Elk	18	0-10	Slight	Slight	B	Medium
	Ginat	15	Level	Severe (P,W)	Severe (P,W)	D	High
	Captina	15	0-6	Severe (P)	Severe (P)	C	Medium
21	Elk	30	0-6	Slight	Slight	B	Low
	Otwell	15	0-4	Severe (P)	Severe (P)	C	Medium
	Huntington	15	0-4	Severe (F)	Severe (F)	B	Low
22	Fairmount	68	12-50	Severe (D,P)	Severe (LWC,S)	D	High
	Lowell	10	6-12	Severe (P)	Moderate (P)	C	Medium

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank(1) Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic(2) Soil Group	Potential Sediment(3) Run-Off
23	Falaya	31	Level	Severe (F,W)	Severe (F,W)	C	Medium
	Waverly	21	Level	Severe (F,W)	Severe (F,W)	D	High
24	Falaya	34	Nearly level	Severe (F,W)	Severe (F,W)	C	Medium
	Waverly	17	Level	Severe (F,W)	Severe (F,W)	D	High
	Vicksburg	8	Nearly level	Severe (F)	Severe (F)	B	Low
25	Faywood	55	6-20	Severe (D,P)	Moderate (P)	C	Medium
	Fairmount	30	12-30	Severe (D,P)	Severe (LWC,S)	D	High
26	Fredonia	30	6-20	Severe (D,S)	Moderate (P)	C	Medium
	Cumberland	20	6-20	Moderate (S,P)	Slight	B	Medium
	Pembroke	15	0-12	Slight	Slight	B	Medium
27	Garmon	20	25-60	Severe (S)	Severe (LWC,S)	C	High
	Crider	15	2-12	Slight	Slight	B	Medium
	Baxter	6	6-20	Moderate (P,S)	Slight	B	Medium
28	Grenada	47	0-12	Severe (P)	Severe (P)	C	Medium
	Calloway	9	Nearly level	Severe (P,W)	Severe (P,W)	C	Medium
	Loring	7	6-20	Severe (P,S)	Moderate (P)	C	Medium
29	Henry	32	Level	Severe (P,W)	Severe (P,W)	D	High
	Okaw	24	Level	Severe (P,S,W)	Severe (P,W)	D	High

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
30	Huntington	32	0-3	Severe (F)	Severe (F)	B	Low
	Egam	16	0-3	Severe (F,P)	Severe (F,P)	C	Medium
	Newark	13	Level	Severe (F,W)	Severe (F,W)	C	Medium
31	Huntington	30	0-4	Severe (F)	Severe (F)	B	Low
	Ginat	23	0-4	Severe (P,W)	Severe (P,W)	D	High
	Wheeling	11	0-12	Slight	Slight	B	Medium
32	Karnak	27	0-4	Severe (F,P,W)	Severe (F,P,W)	D	High
	Falaya	20	0-4	Severe (F,W)	Severe (F,W)	C	Medium
	Bonnie	17	0-4	Severe (F,W)	Severe (F,W)	D	High
33	Karnak	18	Level	Severe (F,P,W)	Severe (F,P,W)	D	High
	McGary	15	0-4	Severe (P,W)	Severe (P,W)	C	Medium
	Melvin	12	Level	Severe (F,W)	Severe (F,W)	D	High
34	Latham	45	20-40	Severe (S)	Severe (S)	D	High
	Shelocta	35	30-50	Severe (S)	Severe (S)	B	High
35	Loring	43	0-25	Severe (P)	Severe (S)	C	High
	Grenada	18	0-10	Severe (P)	Severe (P)	C	Medium
36	Loring	29	2-12	Severe (P)	Moderate (P)	C	Medium
	Grenada	24	2-6	Severe (P)	Severe (P)	C	Medium
	Calloway	10	0-2	Severe (P,W)	Severe (P,W)	C	Medium

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank(1) Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic(2) Soil Group	Potential Sediment(3) Run-Off
37	Loring	37	2-25	Severe (P)	Severe (S)	C	High
	Wellston	32	6-30	Moderate (D)	Severe (S)	B	High
38	Lowell	30	6-12	Severe (P)	Moderate (P)	C	Medium
	Fairmount	25	12-50	Severe (D,P)	Severe (LWC,S)	D	High
39	Lowell	45	2-12	Severe (P)	Moderate (P)	C	Medium
	Faywood	30	6-20	Severe (D,P)	Moderate (P)	C	Medium
	Shelbyville	10	2-6	Moderate (P)	Slight	B	Low
40	Mountview	25	6-12	Moderate (S)	Slight	B	Medium
	Bedford	20	0-6	Severe (P)	Severe (P)	C	Medium
	Baxter	15	6-20	Moderate (P,S)	Slight	B	Medium
41	McGary	34	0-2	Severe (P,W)	Severe (P,W)	C	Medium
	Markland	15	12-20	Severe (P,S)	Moderate (P)	C	Medium
	Lawrence	7	0-2	Severe (P,W)	Severe (P,W)	C	Medium
42	Memphis	41	0-60	Slight(1)	Severe (S)	B	High
	Loring	31	0-25	Severe ((P)	Severe (S)	C	High
	Wakeland	16	Level	Severe (F,W)	Severe (F,W)	C	Medium
43	Memphis	35	12-30	Severe (S)	Severe (S)	B	High
	Loring	25	2-12	Severe (P)	Moderate (P)	C	Medium
	Zanesville	20	6-20	Severe (P)	Severe (P)	C	Medium

(1) Higher slopes > 20% classified severe

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
44	Memphis	25	2-12	Slight	Slight	B	Medium
	Weinbach	20	0-2	Severe (P,W)	Severe (P,W)	C	Medium
	Newark	15	0-2	Severe (F,W)	Severe (F,W)	C	Medium
45	Memphis	31	0-60	Slight[1]	Severe (S)	B	High
	Wellston	21	6-30	Moderate (D)	Severe (S)	B	High
	Dekalb	10	12-20	Severe (D,S)	Moderate (LWC)	B	Medium
46	Nicholson	50	2-6	Severe (P)	Severe (P)	C	Medium
	Corydon	25	12-30	Severe (D,P,S)	Severe (S)	C	High
47	Nicholson	50	2-6	Severe (P)	Severe (P)	C	Medium
	Crider	30	2-6	Slight	Slight	B	Low
48	Nicholson	38	0-8	Severe (P)	Severe (P)	C	Medium
	Faywood	38	6-20	Severe (D,P)	Moderate (P)	C	Medium
49	Nolin	50	Nearly level	Severe (F)	Severe (F)	B	Low
	Newark	23	Nearly level	Severe (F,W)	Severe (F,W)	C	Medium
50	Rigly	35	20-50	Severe (S)	Severe (S)	B	High
	Latham	30	20-50	Severe (S)	Severe (S)	D	High

(1) Higher slopes ≫ 20% classified severe

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
51	Rigly	32	20-50	Severe (S)	Severe (S)	B	High
	Monongahela	17	2-12	Severe (P)	Severe (P)	C	Medium
	Allegheny	15	2-20	Slight	Slight	B	Medium
52	Rosebloom	21	Level	Severe (F,W)	Severe (F,W)	D	High
	Wheeling	18	0-12	Slight	Slight	B	Medium
	Dubbs	17	0-3	Severe (F,P)	Slight	B	Low
53	Rossmoyne	56	0-6	Severe (P)	Severe (P)	C	Medium
	Jessup	31	6-20	Severe (P)	Severe (P)	C	Medium
54	Sadler	25	0-6	Severe (P)	Severe (P)	C	Medium
	Zanesville	20	2-12	Severe (P)	Severe (P)	C	Medium
	Johnsburg	15	0-2	Severe (P,W)	Severe (P,W)	D	High
55	Sadler	28	0-6	Severe (P)	Severe (P)	C	Medium
	Zanesville	18	2-12	Severe (P)	Severe (P)	C	Medium
	Wellston	12	12-20	Severe (S)	Slight	B	Medium
56	Shrouts	32	12-30	Severe (D,P,S)	Severe (P,S)	D	High
	Beasley	30	2-12	Severe (P)	Moderate (P)	C	Medium
57	Uniontown	25	0-12	Moderate (P,W)	Moderate (P)	B	Medium
	Dekoven	22	Level	Severe (F,W)	Severe (F,W)	D	High
	Henshaw	20	0-4	Severe (P,W)	Moderate (P)	C	Medium

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank(1) Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic(2) Soil Group	Potential Sediment(3) Run-Off
58	Vandalia	35	20-50	Severe (S)	Severe (S)	B	High
	Upshur	25	12-35	Severe (P,S)	Severe (P,S)	C	High
	Latham	15	12-35	Severe (P,S)	Severe (P,S)	D	High
59	Wakeland	30	Level	Severe (F,W)	Severe (F,W)	C	Medium
	Dekoven	22	Level	Severe (F,W)	Severe (F,W)	D	High
	Adler	19	Level	Severe (F)	Severe (F)	C	Medium
60	Weikert	25	20-30	Severe (D,S)	Severe (LWC,S)	D	High
	Zanesville	20	2-12	Severe (P,S)	Severe (P)	C	Medium
	Caneyville	18	12-20	Severe (D,P,S)	Moderate (P)	C	Medium
61	Wharton	48	25-40	Severe (P,S)	Severe (P,S)	C	High
	Shelocta	41	20-50	Severe (S)	Severe (S)	B	High
62	Wharton	48	6-30	Severe (P,S)	Severe (P,S)	C	High
	Shelocta	25	12-35	Severe (S)	Severe (S)	B	High
63	Wharton	30	6-20	Severe (P)	Severe (P)	C	Medium
	Tilsit	25	0-6	Severe (P)	Severe (P)	C	Medium
	Johnsburg	20	0-4	Severe (P,W)	Severe (P,W)	D	High
64	Wheeling	21	0-6	Slight	Slight	B	Low
	Huntington	21	0-4	Severe (F)	Severe (F)	B	Low

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank(1) Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic(2) Soil Group	Potential Sediment(3) Run-Off
65	Wheeling	33	0-4	Slight	Slight	B	Low
	Sciotoville	30	0-4	Severe (P)	Severe (P)	C	Medium
	Huntington	15	0-4	Severe (F)	Severe (F)	B	Low
66	Wheeling	30	0-12	Slight	Slight	B	Medium
	Weinbach	25	0-4	Severe (P,W)	Severe (P,W)	C	Medium
	Huntington	20	0-4	Severe (F)	Severe (F)	B	Low
67	Zanesville	32	2-12	Severe (P,S)	Severe (P)	C	Medium
	Caneyville	22	12-30	Severe (D,S)	Severe (S)	C	High
	Christian	12	6-20	Moderate (P)	Moderate (P)	C	Medium
68	Zanesville	31	2-12	Severe (D,S)	Severe (P,W)	C	Medium
	Gilpin	21	12-20	Severe (D,S)	Slight	B	Medium
	Weikert	19	20-30	Severe (S)	Severe (LWC,S)	D	High
69	Zanesville	14	2-12	Severe (P,S)	Severe (P)	C	Medium
	Wellston	14	6-30	Moderate (D)	Severe (S)	B	High
	Weikert	7	20-35	Severe (S)	Severe (LWC,S)	D	High
70	Zanesville	20	2-12	Severe (S)	Severe (P)	C	Medium
	Wellston	15	6-20	Moderate (D)	Slight	B	Medium
	Weikert	12	20-30	Severe (S)	Severe (LWC,S)	D	High
71	Zipp	55	0-2	Severe (P,W)	Severe (P,W)	D	High
	Robertsville	20	0-2	Severe (F,P,W)	Severe (P,W)	D	High

EXHIBIT 3.2t (Continued) SOIL INTERPRETATION

Map Number	Soil Association	Percent of Association	Dominant Slope(%)	Septic Tank[1] Absorption Field (2-6% Slopes)	Land Application of Wastewater (2-6% Slopes)	Hydrologic[2] Soil Group	Potential Sediment[3] Run-Off
72	Caneyville	40	30-50	Severe (S)	Severe (S)	C	High
	Brookside	30	20-50	Severe (S)	Severe (S)	C	High
	Rigley	10	20-50	Severe (S)	Severe (S)	B	High

(1) Limitations: P = Percolation; S = Slope; D = Shallow Depth; F = Flooding; W = Wet; LWC = Low Available Water Capacity; MWC = Medium Available Water Capacity

(2)

Hydrologic Soil Group	Infiltration Rate
A	High
B	Moderate
C	Slow
D	Very Slow

(3) Interpretation for Sediment Run-Off is based on dominant slope and hydrologic soil group only. Rainfall factor, vegetative cover and conservation practices are held constant.

EXHIBIT 3.5t POPULATION TRENDS AND PROJECTIONS
1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Thirty-four County Total	1494360	1629679	1728728	1841911	2234659	135319/9%	99049/6%	113183/7%	392748/21%
Out of Basin	707785	769102	812185	877207	1129030	61317/9%	43083/6%	65022/8%	251823/29%
In ORB	786575	860577	916543	964704	1105629	74002/9%	55966/7%	48161/5%	140925/15%
Urban	548232	623864	681687	730486	851140	75632/14%	57823/9%	48799/7%	120654/17%
Rural	238343	236713	234856	234218	254489	-1630/-1%	-1857/-1%	-638/0%	20271/9%
Non-farm	43120	47983	52641	49802	52268	4863/11%	4658/10%	-2839/-5%	2466/5%
Farm	195223	188730	182215	184416	202221	-6493/-3%	-6515/-3%	2201/1%	17805/10%
Ballard County	8291	8276	8214	8187	8186	-15/0%	-62/-1%	-27/0%	-1/0%
Out of Basin	4718	4709	4674	4687	4751	-9/0%	-35/-1%	13/0%	64/1%
In ORB	3573	3567	3540	3500	3435	-6/0%	-27/-1%	-40/-1%	-65/-2%
Urban	--	--	--	--	--	--	--	--	--
Rural	3573	3567	3540	3500	3435	-6/0%	-27/-1%	-40/-1%	-65/-2%
Non-farm	1315	1477	1516	1550	1660	162/12%	39/3%	34/2%	110/7%
Farm	2258	2090	2024	1950	1775	-168/-7%	-66/-3%	-74/-4%	-175/-9%
Boone County	21940	32812	38054	44538	72315	10872/50%	5242/16%	6484/17%	27777/62%
Out of Basin	1946	2911	3376	3903	5611	965/50%	465/16%	527/16%	1708/44%
In ORB	19994	29901	34678	40635	66704	9907/50%	4777/16%	5957/17%	26069/64%
Urban	5837	11457	14500	17500	28250	5620/96%	3043/27%	3000/21%	10750/61%
Rural	14157	18444	20178	23135	38450	4287/30%	1734/9%	2957/15%	15315/66%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	14157	18444	20178	23135	38450	4287/30%	1734/9%	2957/15%	15315/66%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Boyd County	52163	52376	54562	56748	63306	213/0%	2186/4%	2186/4%	6558/12%
Out of Basin	16853	16922	17628	17259	18579	69/0%	706/4%	-369/-2%	1320/8%
In ORB	35310	35454	36934	39489	44727	144/0%	1480/4%	2555/7%	5238/13%
Urban	34427	33930	34957	37254	41755	-497/-1%	1027/3%	2297/7%	4501/12%
Rural	883	1524	1977	2235	2972	641/73%	453/30%	258/13%	737/33%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	883	1524	1977	2235	2972	641/73%	453/30%	258/13%	737/33%
Bracken County	7422	7227	7353	7548	8447	-195/-3%	126/2%	195/3%	899/12%
Out of Basin	2342	2280	2320	2257	2314	-62/-3%	40/2%	-63/-3%	57/3%
In ORB	5080	4947	5033	5291	6133	-133/-3%	86/2%	258/5%	842/16%
Urban	--	--	--	--	--	--	--	--	--
Rural	5080	4947	5033	5291	6133	-133/-3%	86/2%	258/5%	842/16%
Non-farm	1983	2059	2225	2400	2900	76/4%	166/8%	175/8%	500/21%
Farm	3097	2888	2808	2891	3233	-209/-7%	-80/-3%	83/3%	342/12%
Breckinridge County	15545	15123	15339	16159	19703	-422/-3%	216/1%	820/5%	3544/22%
Out of Basin	4329	4345	4507	4751	5915	16/0%	162/4%	244/5%	1164/25%
In ORB	11216	10778	10832	11408	13788	-438/-4%	54/1%	576/5%	2380/21%
Urban	--	--	--	--	--	--	--	--	--
Rural	11216	10778	10832	11408	13788	-438/-4%	54/1%	576/5%	2380/21%
Non-farm	3901	4235	4669	5099	7188	334/9%	435/10%	430/9%	2089/41%
Farm	7315	6543	6163	6309	6600	-772/-11%	-380/-6%	146/2%	291/5%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Caldwell County	13073	13179	13989	14800	18631	106/1%	810/6%	811/6%	3831/26%
Out of Basin	8723	8794	9334	9998	13037	71/1%	540/6%	664/7%	3039/30%
In ORB	4350	4385	4655	4802	5594	35/1%	270/6%	147/3%	792/16%
Urban	562	629	715	763	1060	67/12%	86/14%	48/7%	297/39%
Rural	3788	3756	3940	4039	4534	-32/-1%	181/5%	99/3%	495/12%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	3788	3756	3940	4039	4534	-32/-1%	184/5%	99/3%	495/12%
Campbell County	86803	88561	95126	101751	121626	1758/2%	6565/7%	6625/7%	19875/20%
Out of Basin	30228	30840	33126	35451	42326	612/2%	2286/7%	2325/7%	6875/19%
In ORB	56575	57721	62000	66300	79300	1146/2%	4279/7%	4300/7%	13000/20%
Urban	46957	50794	58000	62000	74200	3837/8%	7206/14%	4000/7%	12200/20%
Rural	9618	6927	4000	4300	5100	-2691/-28%	-2927/-42%	300/8%	800/19%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	9618	6927	4000	4300	5100	-2691/-28%	-2927/-42%	300/8%	800/19%
Carroll County	7978	8523	8863	9262	10850	545/7%	340/4%	399/5%	1588/17%
Out of Basin	6434	6874	7148	7438	9131	440/7%	274/4%	290/4%	1693/23%
In ORB	1544	1649	1715	1824	1719	105/7%	66/4%	109/6%	-105/-6%
Urban	--	--	--	--	--	--	--	--	--
Rural	1544	1649	1715	1824	1719	105/7%	66/4%	109/6%	-105/-6%
Non-farm	342	385	431	476	673	43/13%	46/12%	45/10%	197/41%
Farm	1202	1264	1284	1348	1046	62/5%	20/2%	64/5%	-302/-22%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Carter County	20817	19850	19856	19862	19885	-967/-5%	6/0%	6/0%	23/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	20817	19850	19856	19862	19885	-967/-5%	6/0%	6/0%	23/0%
Urban	--	--	--	2750	3400	--	--	--	650/24%
Rural	20817	19850	19856	17112	16485	-967/-5%	6/0%	-2744/-14%	-627/-4%
Non-farm	2580	3550	3950	1750	2400	970/38%	400/11%	-2200/-56%	650/37%
Farm	18237	16300	15906	15362	14085	-1937/-11%	-394/-2%	-544/-3%	-1277/-8%
Christian County	56904	56224	60500	65400	84150	-680/-1%	4276/8%	4900/8%	18750/29%
Out of Basin	53748	53106	57145	62097	81128	-642/-1%	4039/8%	4952/9%	19031/31%
In ORB	3156	3118	3355	3303	3022	-38/-1%	237/8%	-52/-2%	-281/-9%
Urban	--	--	--	--	--	--	--	--	--
Rural	3156	3118	3355	3303	3022	-38/-1%	237/8%	-52/-2%	-281/-9%
Non-farm	631	631	631	631	631	0/0%	0/0%	0/0%	0/0%
Farm	2525	2487	2724	2672	2391	-38/-2%	237/10%	-52/-2%	281/11%
Crittenden County	8648	8493	8796	9100	10600	-155/-2%	303/4%	304/3%	1500/16%
Out of Basin	1265	1243	1287	1310	1454	-22/-2%	44/4%	23/2%	144/11%
In ORB	7383	7250	7509	7790	9146	-133/-2%	259/4%	281/4%	1356/17%
Urban	--	3008	3204	3426	4493	--	196/7%	222/7%	1067/31%
Rural	7383	4242	4305	4364	4653	-133/-2%	63/1%	59/1%	289/7%
Non-farm	2468	--	--	--	--	--	--	--	--
Farm	4915	4242	4305	4364	4653	-673/-14%	63/1%	59/1%	289/7%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Daviess County	70588	79486	84705	91627	116864	8898/13%	5219/7%	6922/8%	25237/28%
Out of Basin	42428	47776	50570	54530	69231	5348/13%	2794/6%	3960/8%	14701/27%
In ORB	28160	31710	34135	37097	47633	3550/13%	2425/8%	2962/9%	10536/28%
Urban	21371	25430	27430	29946	38840	4059/19%	2000/8%	2516/9%	8894/30%
Rural	6789	6280	6705	7151	8793	-509/-7%	425/7%	446/7%	1642/23%
Non-farm	651	761	816	871	1100	110/17%	55/7%	55/7%	229/26%
Farm	6138	5519	5889	6280	7693	-619/-10%	370/7%	391/7%	1413/23%
Elliott County	6330	5933	5933	5933	5933	-397/-6%	0/0%	0/0%	0/0%
Out of Basin	258	242	242	217	234	-16/-6%	0/0%	-25/-10%	17/8%
In ORB	6072	5691	5691	5716	5699	-381/-6%	0/0%	25/0%	-17/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	6072	5691	5691	5716	5699	-381/-6%	0/0%	25/0%	-17/0%
Non-farm	195	192	310	380	570	-3/-2%	118/61%	70/23%	190/50%
Farm	5877	5499	5381	5336	5129	-378/-6%	-118/-2%	-45/-1%	-207/-4%
Gallatin County	3867	4134	4492	4932	6787	267/7%	358/9%	440/10%	1855/38%
Out of Basin	758	810	880	1169	1141	52/7%	70/9%	289/33%	-28/-2%
In ORB	3109	3324	3612	3763	5646	215/7%	288/9%	151/4%	1883/50%
Urban	--	--	--	--	2558	--	--	--	--
Rural	3109	3324	3612	3763	3088	215/7%	288/9%	151/4%	-675/-18%
Non-farm	981	1232	1431	1630	--	251/26%	199/16%	199/14%	--
Farm	2128	2092	2181	2133	3088	-36/-2%	89/4%	-48/-2%	955/45%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Greenup County	29238	33192	35412	37632	44292	3954/14%	2220/9%	2220/6%	6660/18%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	29238	33192	35412	37632	44292	3954/14%	2220/7%	2220/6%	6660/18%
Urban	3741	7380	9000	16225	29680	3639/97%	1620/22%	7225/80%	13455/83%
Rural	25497	25812	26412	21407	14612	315/1%	600/2%	-5005/-19%	-6795/-32%
Non-farm	6848	9309	11340	7872	5238	2461/36%	2031/22%	-3468/-31%	-2634/-33%
Farm	18649	16503	15072	13535	9374	-2146/-12%	-1431/-9%	-1537/-10%	-4161/-31%
Hancock County	5330	7080	7832	8731	12584	1750/33%	752/11%	899/11%	3853/44%
Out of Basin	1173	1558	1723	1921	867	385/33%	165/11%	198/11%	-1054/-55%
In ORB	4157	5522	6109	6810	11717	1365/33%	587/11%	701/11%	4907/72%
Urban	--	--	--	--	--	--	--	--	--
Rural	4157	5522	6109	6810	11717	1365/33%	587/11%	701/11%	4907/72%
Non-farm	1492	2857	3500	4050	5800	1365/91%	643/23%	550/16%	1750/43%
Farm	2665	2665	2609	2760	5917	0/0%	-56/-2%	151/6%	3157/114%
Hardin County	67789	78421	83974	89540	105553	10632/16%	5553/7%	5566/7%	16013/18%
Out of Basin	59898	69292	74199	79118	93267	9394/16%	4907/7%	4919/7%	14149/18%
In ORB	7891	9129	9775	10422	12286	1238/16%	646/7%	647/7%	1864/18%
Urban	--	2987	3286	3584	4465	--	299/10%	298/9%	881/25%
Rural	7891	6142	6489	6838	7821	1238/16%	347/6%	349/5%	983/14%
Non-farm	4162	1741	1748	1769	1862	-2421/-58%	7/0%	21/1%	93/5%
Farm	3729	4401	4741	5069	5959	672/18%	340/8%	328/7%	890/18%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Henderson County	33519	36031	37905	39778	46783	2512/7%	1874/5%	1873/5%	7005/18%
Out of Basin	5279	5675	5970	6263	7734	396/7%	295/5%	293/5%	1471/23%
In ORB	28240	30356	31935	33515	39049	2116/7%	1579/5%	1580/5%	5534/17%
Urban	16892	23311	24377	25778	29981	6419/38%	1066/5%	1401/6%	4203/16%
Rural	11348	7045	7558	7737	9068	-4303/-38%	513/7%	179/2%	1331/17%
Non-farm	746	880	926	972	1145	134/18%	46/5%	46/5%	173/18%
Farm	10602	6165	6632	6765	7923	-4437/-42%	467/8%	133/2%	1158/17%
Henry County	10987	10910	11421	12066	14842	-77/-1%	511/5%	645/6%	2776/23%
Out of Basin	10786	10710	11211	11845	14569	-76/-1%	501/5%	634/6%	2724/23%
In ORB	201	200	210	221	273	-1/-1%	10/5%	11/5%	52/24%
Urban	--	--	--	--	--	--	--	--	--
Rural	201	200	210	221	273	-1/-1%	10/5%	11/5%	52/24%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	201	200	210	221	273	-1/-1%	10/5%	11/5%	52/24%
Hopkins County	38458	38167	38873	39843	43796	-291/-1%	706/2%	970/2%	3953/10%
Out of Basin	26507	26306	26793	26189	34097	-201/-1%	487/2%	-604/-2%	7908/30%
In ORB	11951	11861	12080	13654	9699	-90/-1%	219/2%	1574/13%	-3955/-29%
Urban	5788	2830	3200	3400	4000	-2958/-51%	370/13%	200/6%	600/18%
Rural	6163	9031	8880	10254	5699	2868/47%	-151/-2%	1374/15%	-4555/-44%
Non-farm	--	2321	2320	2320	2320	--	-1/0%	0/0%	0/0%
Farm	6163	6710	6560	7934	3379	547/9%	-150/-2%	1374/21%	-4555/-57%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Jefferson County	610947	695055	744480	800500	994525	84108/14%	49425/7%	56020/8%	194025/24%
Out of Basin	249266	283582	303747	340209	488311	34316/14%	20165/7%	36462/12%	148102/44%
In ORB	361681	411473	440733	460291	506214	49792/14%	29260/7%	19558/4%	45923/10%
Urban	361681	411473	440733	460291	506214	49792/14%	29260/7%	19558/4%	45923/10%
Rural	--	--	--	--	--	--	--	--	--
Non-farm	--	--	--	--	--	--	--	--	--
Farm	--	--	--	--	--	--	--	--	--
Kenton County	120700	129440	138330	147220	173890	8740/7%	8890/7%	8890/6%	26670/18%
Out of Basin	94523	101368	108330	115220	136890	6845/7%	6962/7%	6890/6%	20670/18%
In ORB	26177	28072	30000	32000	38000	1895/7%	1928/7%	2000/7%	6000/19%
Urban	25960	27819	29729	31711	37659	1859/7%	1910/7%	1982/7%	5948/19%
Rural	217	253	271	289	341	36/17%	18/7%	18/7%	52/18%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	217	253	271	289	341	36/17%	18/7%	18/7%	52/18%
Lawrence County	12134	10726	10726	10726	10726	-1408/-12%	0/0%	0/0%	0/0%
Out of Basin	11188	9890	9890	9890	9890	-1298/-12%	0/0%	0/0%	0/0%
In ORB	946	836	836	836	836	-110/-12%	0/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	946	836	836	836	836	-110/-12%	0/0%	0/0%	0/0%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	946	836	836	836	836	-110/-12%	0/0%	0/0%	0/0%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Lewis County	13115	12355	12300	12300	12300	-760/-6%	-55/0%	0/0%	0/0%
Out of Basin	501	472	470	470	470	-29/-6%	-2/0%	0/0%	0/0%
In ORB	12614	11883	11830	11830	11830	-731/-6%	-53/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	12614	11883	11830	11830	11830	-731/-6%	-53/0%	0/0%	0/0%
Non-farm	1990	1990	1990	1990	1990	0/0%	0/0%	0/0%	0/0%
Farm	10624	9893	9840	9840	9840	-731/-7%	-53/-1%	0/0%	0/0%
Livingston County	7029	7596	7848	8100	9300	567/8%	252/3%	252/3%	1200/15%
Out of Basin	4007	4330	4474	4617	5300	323/8%	144/3%	143/3%	683/15%
In ORB	3022	3266	3374	3483	4000	244/8%	108/3%	109/3%	517/15%
Urban	--	--	--	--	--	--	--	--	--
Rural	3022	3266	3374	3483	4000	244/8%	108/3%	109/3%	517/15%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	3022	3266	3374	3483	4000	244/8%	108/3%	109/3%	517/15%
Mason County	18454	17273	16814	16814	16814	-1181/-6%	-459/-3%	0/0%	0/0%
Out of Basin	6309	5905	5748	5748	5748	-404/-6%	-157/-3%	0/0%	0/0%
In ORB	12145	11368	11066	11066	11066	-777/-6%	-302/-3%	0/0%	0/0%
Urban	8484	7411	7188	7188	7188	-1073/-13%	-223/-3%	0/0%	0/0%
Rural	3661	3957	3878	3878	3878	296/8%	-79/-2%	0/0%	0/0%
Non-farm	716	716	716	716	716	0/0%	0/0%	0/0%	0/0%
Farm	2945	3241	3162	3162	3162	296/10%	-79/-2%	0/0%	0/0%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
McCracken County	57306	58281	61911	62708	65023	975/2%	3630/6%	797/1%	2315/4%
Out of Basin	34635	35224	35693	37045	39639	589/2%	469/1%	1352/4%	2594/7%
In ORB	22671	23057	26218	25663	25384	386/2%	3161/14%	-555/-2%	-279/-1%
Urban	8620	7907	8192	8513	9426	-713/-8%	285/4%	321/4%	913/11%
Rural	14051	15150	18026	17150	15958	1099/8%	2876/19%	-876/-5%	-1192/-7%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	14051	15150	18026	17150	15958	1099/8%	2876/19%	-876/-5%	-1192/-7%
Meade County	18938	18796	19157	19517	20130	-142/-1%	361/2%	360/2%	613/3%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	18938	18796	19157	19517	20130	-142/-1%	361/2%	360/2%	613/3%
Urban	--	--	2750	4100	8210	--	--	1350/49%	4110/100%
Rural	18938	18796	16407	15417	11920	-142/-1%	-2389/-13%	-990/-6%	-3497/-23%
Non-farm	3190	4600	3885	4167	5041	1410/44%	-715/-16%	282/7%	874/21%
Farm	15748	14196	12522	11250	6879	-1552/-10%	-1674/-12%	-1272/-10%	-4371/-39%
Oldham County	13388	14687	16428	18606	27847	1299/10%	1741/12%	2178/13%	9241/50%
Out of Basin	2410	2644	2957	3350	5012	234/10%	313/12%	393/13%	1662/50%
In ORB	10978	12043	13471	15256	22835	1065/10%	1428/12%	1785/13%	7579/50%
Urban	--	--	--	--	2676	--	--	--	--
Rural	10978	12043	13471	15256	20159	1065/10%	1428/12%	1785/13%	4903/32%
Non-farm	2168	1713	1851	2050	--	-455/-21%	138/8%	199/11%	--
Farm	8810	10330	11620	13206	20159	1520/17%	1290/12%	1586/14%	6953/53%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS
1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Pendleton County	9968	9949	10204	10526	11825	-19/0%	255/3%	322/3%	1299/12%
Out of Basin	9477	9459	9701	10007	11242	-18/0%	242/3%	306/3%	1235/12%
In ORB	491	490	503	519	583	-1/0%	13/3%	16/3%	64/12%
Urban	--	--	--	--	--	--	--	--	--
Rural	491	490	503	519	583	-1/0%	13/3%	16/3%	64/12%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	491	490	503	519	583	-1/0%	13/3%	16/3%	64/12%
Rowan County	12808	17010	14084	15216	16492	4202/33%	-2926/-17%	1132/8%	1276/8%
Out of Basin	12612	16749	13868	14982	16239	4137/33%	-2881/-17%	1114/8%	1257/8%
In ORB	196	261	216	234	253	65/33%	-45/-17%	18/8%	19/8%
Urban	--	--	--	--	--	--	--	--	--
Rural	196	261	216	234	253	65/33%	-45/-17%	18/8%	19/8%
Non-farm	--	--	--	--	--	--	--	--	--
Farm	196	261	216	234	253	65/33%	-45/-17%	18/8%	19/8%
Trimble County	5102	5349	5487	5637	6149	247/5%	138/3%	150/3%	512/9%
Out of Basin	2175	2280	2339	2427	2696	105/5%	59/3%	88/4%	269/11%
In ORB	2927	3069	3148	3210	3453	142/5%	79/3%	62/2%	243/8%
Urban	--	--	--	--	--	--	--	--	--
Rural	2927	3069	3148	3210	3453	142/5%	79/3%	62/2%	243/8%
Non-farm	1082	1536	1681	1821	2260	454/42%	145/9%	140/8%	439/24%
Farm	1845	1533	1467	1389	1193	-312/-17%	-66/-4%	-78/-5%	-196/-14%

EXHIBIT 3.5t (Continued) POPULATION TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Population					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Union County	14537	15882	16340	16920	19238	1345/9%	458/3%	580/4%	2318/14%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	14537	15882	16340	16920	19238	1345/9%	458/3%	580/4%	2318/14%
Urban	3741	3563	7226	8590	11060	-178/-5%	3663/103%	1364/19%	2470/29%
Rural	10796	12319	9114	8330	8178	1523/14%	-3205/-26%	-784/-9%	-152/-2%
Non-farm	3795	3800	3280	3950	5500	5/0%	-520/-14%	670/20%	1550/39%
Farm	7001	8519	5834	4380	2678	1518/22%	-2685/-32%	-1454/-25%	-1702/-39%
Webster County	14244	13282	13420	13684	15267	-962/-7%	138/1%	264/2%	1583/12%
Out of Basin	3009	2806	2835	2874	3207	-203/-7%	29/1%	39/1%	333/12%
In ORB	11235	10476	10585	10810	12060	-759/-7%	109/1%	225/2%	1250/12%
Urban	3771	4270	7200	7467	9275	499/13%	2930/69%	267/4%	1808/24%
Rural	7464	6206	3385	3343	2785	-1258/-17%	-2821/-45%	-42/-1%	-558/-17%
Non-farm	1884	1998	--	--	--	114/6%	--	--	--
Farm	5580	4208	3385	3343	2785	-1372/-25%	-823/-20%	-42/-1%	-558/-17%

County population projections for the Ohio River Basin are based on the Spindletop Research projections presented in the ADD reports. These county projections are used to derive population projections for urban, rural non-farm, and rural farm areas. In addition to county-wide population projections, recorded population and estimated population in design and planning reports where available were used to derive projected population. County farm population is obtained by subtracting the urban and rural non-agricultural population in the county from the total county population. County farm land area is determined by subtracting the urban and rural non-farm areas from the total county area. Rural farm population density in the county is then calculated by dividing the county farm population by the farm land area in the county. This rural farm population density is then used to determine the farm population within a segment. Total population in the segment is then obtained by adding the known urban and rural non-farm population in the segment with the segment farm population. Segment population data are presented in Appendix B. Additional population data are presented in Appendix A.

In the case of the Standard Metropolitan Statistical Areas (SMSA) where the urban population is not confined to a single city limit, estimates of urban population and urban land area are made using data from the U.S. Census Bureau. For example, in the Louisville SMSA the entire area of the Jefferson County that falls within the Ohio River Basin is considered as urban because of the highly built up and urbanized nature of the area.

HOUSING

Exhibit 3.6t presents the housing units in the Ohio River Basin and for each county in the Ohio River Basin for the years 1960, 1970, 1975, 1980, and 1995. Also contained in this exhibit are the total and percent changes in housing between the years 1960-70, 1979-75, 1975-80, and 1980-95. For the entire Ohio River Basin and for each county in the Ohio River Basin the housing units are divided into two categories: outside of basin and in ORB. Housing in the Ohio River Basin is further classified into urban, rural farm and rural non-farm categories. Additional housing data are presented in Appendix A.

The housing data for each county is developed in three stages:

1. Housing units per county for the base year 1970 is taken from the ADD study reports. Using 1970 county population the people/unit figure for each county is calculated. This figure ranged from 1.86 for Lawrence County to 4.26 for Hardin County with an average of 2.95 for the 34 Ohio River Counties.

2. For each county, the number of people living inside and outside the basin are then divided by the number of people per housing unit calculated in step 1 to obtain the housing unit breakdown by county. This same method is then used to develop housing units for urban, rural non-agricultural and rural agricultural areas for each county in the basin.

3. The housing projections for 1975, 1980 and 1995 are based on the percent change in population during the intermediate years. In cases where population declined, the housing units are kept constant. In cases where the population shifted from one category to another (i.e. ruran non-agricultural to urban) over a planning period the housing units are also shifted to the appropriate category.

EMPLOYMENT

Past non-agricultural employment for the years 1960 and 1970, and projected future non-agricultural employment for the years 1975, 1980 and 1995 in the Ohio River Basin and in each county within the basin are presented in Exhibit 3.7t. Also presented in this table are the total and percent changes in non-agricultural employment between the years 1960-70, 1970-75, 1975-80 and 1980-95 for the basin and for each county in the basin. Employment projections for each county are derived from the ADD employment projections made by the Kentucky Department of Commerce and from the historical employment trends data for each county. Employment projections for the eight counties - Daviess, Henderson, Jefferson, Boone, Kenton, Campbell, Greenup and Boyd - influenced by the Standard Metropolitan Statistical Areas within the basin are derived using regional planning reports and proposed industrial developments in these counties in addition to ADD projections and historical trends. Projections for these eight counties have been reviewed by the Kentucky Department of Commerce.

LAND USE

Land use for the purposes of this 303(e) basin plan preparation is divided into two major categories: urban and rural. Urban areas are defined to include all incorporated places, and all residential, commercial and industrial areas. All other areas are considered to be rural. Urban land use is further classified as construction related. The construction related land use is interpreted as that area which is converted to urban land use during the previous planning period. For example, if the urban land area in Boone County changed from 37 square miles in 1960 to 43 square miles in 1970, then the construction related area in Boone County in 1970 is considered to be 6 square miles. In this way the land area listed as construction related is also accounted for as urban land use. The rural land use is also further classified into agriculture, silviculture and mining related uses.

Past land uses for the years 1960 and 1970, and projected future land uses for the years 1975, 1980, and 1995 together with between year, total and percent changes for the various land use categories in the Ohio River Basin and for each county in the basin are presented in Exhibit 3.8t. This table also contains the total land areas of the thirty-four counties and of each individual county within and outside of the Ohio River Basin. Data for the various land use categories are obtained from U.S. Geological Survey, Soil Conservation Service and Area Development District land use maps. In some cases where silviculture areas are not identified statewide, figures developed by the EPA are used to derive county figures.

Exhibit 3.9m illustrates the existing land use pattern in the Ohio River Basin. The mineral resources of the basin are compiled by the Deparment for Natural Resources and Environmental Protection and are shown in Exhibit 3.10m.

EXHIBIT 3.6t HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Thirty-four County Total	468698	529613	561208	598087	724057	60915/13%	31595/6%	36879/7%	125970/21%
Out of Basin	216693	243756	257943	278873	358187	27063/12%	14187/6%	20930/8%	79314/28%
In ORB	252005	285857	303265	319214	365870	33852/13%	17408/6%	15949/5%	46656/15%
Urban	174086	203816	220922	236677	275112	29730/17%	17106/8%	15755/7%	38435/16%
Rural	77919	82041	82343	82537	90758	4122/5%	302/0%	194/0%	8221/10%
Farm	62031	65526	66706	69297	77179	3495/6%	1180/2%	2591/4%	7882/11%
Non-farm	15888	16515	15637	13240	13579	627/4%	-878/-5%	-2397/-15%	339/3%
Ballard County	3159	3159	3159	3159	3159	0/0%	0/0%	0/0%	0/0%
Out of Basin	1797	1797	1797	1797	1797	0/0%	0/0%	0/0%	0/0%
In ORB	1362	1362	1362	1362	1362	0/0%	0/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	1362	1362	1362	1362	1362	0/0%	0/0%	0/0%	0/0%
Farm	798	798	798	798	798	0/0%	0/0%	0/0%	0/0%
Non-farm	564	564	564	564	564	0/0%	0/0%	0/0%	0/0%
Boone County	6406	9566	11088	13016	21098	3160/49%	1522/16%	1928/17%	8082/62%
Out of Basin	566	849	985	1143	1646	283/50%	136/16%	158/16%	503/44%
In ORB	5840	8717	10103	11873	19452	2877/49%	1386/16%	1770/18%	7579/64%
Urban	1704	3340	4242	5133	8264	1636/96%	902/27%	891/21%	3131/61%
Rural	4136	5377	5861	6740	11188	1241/30%	484/9%	879/15%	4448/66%
Farm	4136	5377	5861	6740	11188	1241/30%	484/9%	879/15%	4448/66%
Non-farm	--	--	--	--	--	--	--	--	--

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Boyd County	18508	18508	19269	20224	22569	0/0%	761/4%	955/5%	2345/12%
Out of Basin	5980	5980	6219	6219	6717	0/0%	239/4%	0/0%	498/8%
In ORB	12528	12528	13050	14005	15852	0/0%	522/4%	955/7%	1847/13%
Urban	11989	11989	12349	13213	14799	0/0%	360/3%	864/7%	1586/12%
Rural	539	539	701	792	1053	0/0%	162/30%	91/13%	261/33%
Farm	539	539	701	792	1053	0/0%	162/30%	91/13%	261/33%
Non-farm	--	--	--	--	--	--	--	--	--
Bracken County	2492	2492	2542	2618	2932	0/0%	50/2%	76/3%	314/12%
Out of Basin	786	786	802	802	826	0/0%	16/2%	0/0%	24/3%
In ORB	1706	1706	1740	1816	2106	0/0%	34/2%	76 /4%	290/16%
Urban	--	--	--	--	--	--	--	--	--
Rural	1706	1706	1740	1816	2106	0/0%	34/2%	76/4%	290/16%
Farm	996	996	996	1017	1139	0/0%	0/0%	21/2%	122/12%
Non-farm	710	710	744	799	967	0/0%	34/5%	55/7%	168/21%
Breckinridge County	4738	5688	5916	6212	7579	950/20%	228/4%	296/5%	1367/22%
Out of Basin	1392	1671	1738	1825	2271	279/20%	67/4%	87/5%	446/24%
In ORB	3346	4017	4178	4387	5308	671/20%	161/4%	209/5%	921/21%
Urban	--	--	--	--	--	--	--	--	--
Rural	3346	4017	4178	4387	5308	671/20%	161/4%	209/5%	921/21%
Farm	2352	2517	2517	2562	2716	165/7%	0/0%	45/2%	154/6%
Non-farm	994	1500	1661	1825	2592	506/51%	161/11%	164/10%	767/42%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Caldwell County	4571	4936	5237	5544	6959	365/8%	301/6%	307/6%	1415/26%
Out of Basin	3050	3294	3492	3736	4857	244/8%	198/6%	244/7%	1121/30%
In ORB	1521	1642	1745	1808	2102	121/8%	103/6%	63/4%	294/16%
Urban	197	236	269	288	400	39/20%	33/14%	19/7%	112/39%
Rural	1324	1406	1476	1520	1702	82/6%	70/5%	44/3%	182/12%
Farm	1324	1406	1476	1520	1702	82/6%	70/5%	44/3%	182/12%
Non-farm	--	--	--	--	--	--	--	--	--
Cambell County	27619	28568	30772	32949	39402	949/3%	2204/8%	2177/7%	6453/20%
Out of Basin	9779	9948	10595	11337	13491	169/2%	647/7%	742/7%	2154/19%
In ORB	17840	18620	20177	21612	25911	780/4%	1557/8%	1435/7%	4299/20%
Urban	15605	16385	17942	19198	23038	780/5%	1557/8%	1256/7%	3840/20%
Rural	2235	2235	2235	2414	2873	0/0%	0/0%	179/8%	459/19%
Farm	2235	2235	2235	2414	2873	0/0%	0/0%	179/8%	459/19%
Non-farm	--	--	--	--	--	--	--	--	--
Carroll County	2621	2804	2917	3063	3584	183/7%	113/4%	146/5%	521/17%
Out of Basin	2113	2261	2351	2462	2983	148/7%	90/4%	111/5%	521/21%
In ORB	508	543	566	601	601	35/7%	23/4%	35/6%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	508	543	566	601	601	35/7%	23/4%	35/6%	0/0%
Farm	396	416	424	445	445	20/5%	8/2%	21/5%	0/0%
Non-farm	112	127	142	156	156	15/13%	15/12%	14/10%	0/0%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Carter County	8783	8783	8783	8783	8783	0/0%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	8783	8783	8783	8783	8783	0/0%	0/0%	0/0%	0/0%
Urban	--	--	--	1217	1509	--	--	1217/-	292/24%
Rural	8783	8783	8783	7566	7274	0/0%	0/0%	-1217/-14%	-292/-4%
Farm	7212	7212	7212	7212	6789	0/0%	0/0%	0/0%	-423/-6%
Non-farm	1571	1571	1571	354	485	0/0%	0/0%	-1217/-77%	131/37%
Christian County	15297	16250	17550	18954	24451	953/6%	1300/8%	1404/8%	5497/29%
Out of Basin	14449	15349	16577	17981	23478	900/6%	1228/8%	1404/8%	5497/31%
In ORB	848	901	973	973	973	53/6%	72/8%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	848	901	973	973	973	53/6%	72/8%	0/0%	0/0%
Farm	679	719	791	791	791	40/6%	72/10%	0/0%	0/0%
Non-farm	169	182	182	182	182	13/8%	0/0%	0/0%	0/0%
Crittenden County	3191	3370	3505	3624	4220	179/6%	135/4%	119/3%	596/16%
Out of Basin	467	493	514	524	580	26/6%	21/1%	10/2%	56/11%
In ORB	2724	2877	2991	3100	3640	153/6%	114/4%	109/4%	540/17%
Urban	--	1194	1283	1372	1791	1194/--	89/7%	89/7%	419/3%
Rural	2724	1683	1708	1728	1849	-1041/-38%	25/1%	20/1%	121/7%
Farm	1814	1683	1708	1728	1849	-131/-7%	25/1%	20/1%	121/7%
Non-farm	910	--	--	--	--	-910/-100%	--	--	--

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Daviess County	22455	25314	26875	29082	37143	2859/13%	1561/6%	2207/8%	8061/28%
Out of Basin	13524	15215	16128	17418	22121	1691/13%	913/6%	1290/8%	4703/27%
In ORB	8931	10099	10747	11664	15022	1168/13%	648/6%	917/9%	3358/29%
Urban	6931	8099	8747	9534	12394	1168/17%	648/8%	787/9%	2860/30%
Rural	2000	2000	2000	2130	2628	0/0%	0/0%	130/7%	498/23%
Farm	1758	1758	1758	1870	2300	0/0%	0/0%	112/6%	430/23%
Non-farm	242	242	242	260	328	0/0%	0/0%	18/7%	68/26%
Elliott County	2866	2866	2866	2866	2866	0/0%	0/0%	0/0%	0/0%
Out of Basin	117	117	117	117	117	0/0%	0/0%	0/0%	0/0%
In ORB	2749	2749	2749	2749	2749	0/0%	0/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	2749	2749	2749	2749	2749	0/0%	0/0%	0/0%	0/0%
Farm	2656	2656	2656	2656	2656	0/0%	0/0%	0/0%	0/0%
Non-farm	93	93	93	93	93	0/0%	0/0%	0/0%	0/0%
Gallatin County	1215	1300	1414	1567	2156	85/7%	114/9%	153/11%	589/38%
Out of Basin	238	255	278	370	370	17/7%	23/9%	92/33%	0/0%
In ORB	977	1045	1136	1197	1786	68/7%	91/9%	61/5%	589/49%
Urban	--	--	--	--	804	--	--	--	804/–
Rural	977	1045	1136	1197	982	68/7%	91/9%	61/5%	-215/-18%
Farm	658	658	687	687	982	0/0%	29/4%	0/0%	295/43%
Non-farm	319	387	449	510	--	68/21%	62/16%	61/14%	-510/-100%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Greenup County	10481	11897	12675	13486	15913	1416/14%	778/7%	811/6%	2427/18%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	10481	11897	12675	13486	15913	1416/14%	778/7%	811/6%	2427/18%
Urban	1343	2645	3238	5828	10665	1302/97%	593/22%	2590/80%	4837/83%
Rural	9138	9252	9437	7658	5248	114/1%	185/2%	-1779/-19%	-2410/-31%
Farm	5915	5915	5915	5915	3902	0/0%	0/0%	0/0%	-2013/-34%
Non-farm	3223	3337	3522	1743	1346	114/4%	185/6%	-1779/-51%	-397/-23%
Hancock County	1780	2368	2628	2917	4413	588/33%	260/11%	289/11%	1496/51%
Out of Basin	392	521	578	642	642	129/33%	59/11%	64/11%	0/0%
In ORB	1388	1847	2050	2275	3771	459/33%	203/11%	225/11%	1496/66%
Urban	--	--	--	--	--	--	--	--	--
Rural	1388	1847	2050	2275	3771	459/33%	203/11%	225/11%	1496/66%
Farm	891	891	891	935	1895	0/0%	0/0%	44/5%	960/103%
Non-farm	497	956	1159	1340	1876	459/92%	203/21%	181/16%	536/40%
Hardin County	14899	18409	19698	21061	24852	3510/24%	1289/7%	1363/7%	3791/18%
Out of Basin	13165	16266	17405	18623	21975	3101/24%	1139/7%	1218/7%	3352/18%
In ORB	1734	2143	2293	2438	2877	409/24%	150/7%	145/6%	439/18%
Urban	--	701	771	837	1046	701/-	70/10%	66/9%	209/25%
Rural	1734	1442	1522	1601	1831	-292/-17%	80/6%	79/5%	230/14%
Farm	820	1033	1113	1187	1398	213/26%	80/8%	74/7%	211/18%
Non-farm	914	409	409	414	433	-505/-55%	0/0%	5/1%	19/5%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Henderson County	11165	12214	12873	13533	15877	1049/9%	659/5%	660/5%	2344/17%
Out of Basin	1758	1924	2020	2121	2609	166/9%	96/5%	101/5%	488/23%
In ORB	9407	10290	10853	11412	13268	883/9%	563/5%	559/5%	1856/16%
Urban	7019	7902	8298	8796	10203	883/13%	396/5%	498/6%	1407/16%
Rural	2388	2388	2555	2616	3065	0/0%	167/7%	61/2%	449/17%
Farm	2090	2090	2246	2291	2681	0/0%	156/7%	45/2%	390/17%
Non-farm	298	298	309	325	384	0/0%	11/4%	16/5%	59/18%
Henry County	3737	3996	4196	4447	5471	259/7%	200/5%	251/6%	1024/23%
Out of Basin	3669	3923	4119	4366	5370	254/7%	196/5%	247/6%	1004/23%
In ORB	68	73	77	81	101	5/7%	4/5%	4/5%	20/25%
Urban	--	--	--	--	--	--	--	--	--
Rural	68	73	77	81	101	5/7%	4/5%	4/5%	20/25%
Farm	68	73	77	81	101	5/7%	4/5%	4/5%	20/25%
Non-farm	--	--	--	--	--	--	--	--	--
Hopkins County	12651	13487	13802	14368	15805	836/7%	315/2%	566/4%	1437/10%
Out of Basin	8720	9296	9481	9481	10918	576/5%	185/2%	0/0%	1437/15%
In ORB	3931	4191	4321	4887	4887	260/7%	130/3%	566/13%	0/0%
Urban	1904	1000	1130	1198	1198	-904/-47%	130/13%	68/6%	0/0%
Rural	2027	3191	3191	3689	3689	1164/57%	0/0%	498/16%	0/0%
Farm	2027	2371	2371	2869	2869	344/17%	0/0%	498/21%	0/0%
Non-farm	--	820	820	820	820	820/--	0/0%	0/0%	0/0%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Jefferson County	188564	226402	242250	260661	324446	37838/20%	15848/7%	18411/8%	63785/24%
Out of Basin	76934	92372	98838	110939	159752	15438/20%	6466/7%	12101/12%	48813/44%
In ORB	111630	134030	143412	149722	164694	22400/20%	9382/7%	6310/4%	14972/10%
Urban	111630	134030	143412	149722	164694	22400/20%	9382/7%	6310/4%	14972/10%
Rural	--	--	--	--	--	--	--	--	--
Farm	--	--	--	--	--	--	--	--	--
Non-farm	--	--	--	--	--	--	--	--	--
Kenton County	35263	37738	40380	42890	50702	2475/7%	2642/7%	2510/6%	7812/18%
Out of Basin	27621	29554	31623	33520	39553	1933/7%	2069/7%	1897/6%	6033/18%
In ORB	7642	8184	8757	9370	11149	542/7%	573/7%	613/7%	1779/19%
Urban	7579	8110	8678	9285	11049	531/7%	568/7%	607/7%	1764/19%
Rural	63	74	79	85	100	11/17%	5/7%	6/8%	15/18%
Farm	63	74	79	85	100	11/17%	5/7%	6/8%	15/18%
Non-farm	--	--	--	--	--	--	--	--	--
Lawrence County	5767	5767	5767	5767	5767	0/0%	0/0%	0/0%	0/0%
Out of Basin	5317	5317	5317	5317	5317	0/0%	0/0%	0/0%	0/0%
In ORB	450	450	450	450	450	0/0%	0/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	450	450	450	450	450	0/0%	0/0%	0/0%	0/0%
Farm	450	450	450	450	450	0/0%	0/0%	0/0%	0/0%
Non-farm	--	--	--	--	--	--	--	--	--

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Lewis County	4260	4260	4260	4260	4260	0/0%	0/0%	0/0%	0/0%
Out of Basin	163	163	163	163	163	0/0%	0/0%	0/0%	0/0%
In ORB	4097	4097	4097	4097	4097	0/0%	0/0%	0/0%	0/0%
Urban	--	--	--	--	--	--	--	--	--
Rural	4097	4097	4097	4097	4097	0/0%	0/0%	0/0%	0/0%
Farm	3411	3411	3411	3411	3411	0/0%	0/0%	0/0%	0/0%
Non-farm	686	686	686	686	686	0/0%	0/0%	0/0%	0/0%
Livingston County	2528	2979	3068	3160	3634	451/18%	89/3%	92/3%	474/15%
Out of Basin	1441	1698	1749	1801	2071	257/18%	51/3%	52/3%	270/15%
In ORB	1087	1281	1319	1359	1563	194/18%	38/3%	40/3%	204/15%
Urban	--	--	--	--	--	--	--	--	--
Rural	1087	1281	1319	1359	1563	194/18%	38/3%	40/3%	204/15%
Farm	1087	1281	1319	1359	1563	194/18%	38/3%	40/3%	204/15%
Non-farm	--	--	--	--	--	--	--	--	--
Mason County	5956	5956	5956	5956	5956	0/0%	0/0%	0/0%	0/0%
Out of Basin	2036	2036	2036	2036	2036	0/0%	0/0%	0/0%	0/0%
In ORB	3920	3920	3920	3920	3920	0/0%	0/0%	0/0%	0/0%
Urban	2556	2556	2556	2556	2556	0/0%	0/0%	0/0%	0/0%
Rural	1364	1364	1364	1364	1364	0/0%	0/0%	0/0%	0/0%
Farm	1117	1117	1117	1117	1117	0/0%	0/0%	0/0%	0/0%
Non-farm	247	247	247	247	247	0/0%	0/0%	0/0%	0/0%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
McCracken County	20459	21116	21359	21874	22812	657/3%	243/1%	515/2%	938/4%
Out of Basin	12512	12762	12890	13405	14343	250/2%	128/1%	515/4%	938/7%
In ORB	7947	8354	8469	8469	8469	407/5%	115/1%	0/0%	0/0%
Urban	2865	2865	2980	2980	2980	0/0%	115/4%	0/0%	0/0%
Rural	5082	5489	5489	5489	5489	407/8%	0/0%	0/0%	0/0%
Farm	5082	5489	5489	5489	5489	407/8%	0/0%	0/0%	0/0%
Non-farm	--	--	--	--	--	--	--	--	--
Meade County	5783	5783	5783	5925	6129	0/0%	0/0%	142/2%	204/3%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	5783	5783	5783	5925	6129	0/0%	0/0%	142/2%	204/3%
Urban	--	--	846	988	1192	--	846/--	142/17%	204/21%
Rural	5783	5783	4937	4937	4937	0/0%	-846/-15%	0/0%	0/0%
Farm	4368	4368	4368	4368	4368	0/0%	0/0%	0/0%	0/0%
Non-farm	1415	1415	569	569	569	0/0%	-846/-60%	0/0%	0/0%
Oldham County	3753	4245	4758	5387	8076	492/13%	513/12%	629/13%	2689/50%
Out of Basin	695	764	866	979	1469	69/10%	102/13%	113/13%	490/50%
In ORB	3058	3481	3892	4408	6607	423/14%	411/12%	516/13%	2199/50%
Urban	--	--	--	--	773	--	--	--	773 /--
Rural	3058	3481	3892	4408	5834	423/14%	411/12%	516/ 13%	1426/32%
Farm	2563	2986	3356	3813	5834	423/17%	370 /12%	457/14%	2021/53%
Non-farm	495	495	536	595	--	0/0%	41/8%	59/11%	-595/-100%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Pendleton County	2997	2997	3087	3180	3562	0/0%	90/3%	93/3%	382/12%
Out of Basin	2849	2849	2934	3022	3385	0/0%	85/3%	88/3%	363/12%
In ORB	148	148	153	158	177	0/0%	5/3%	5/3%	19/12%
Urban	--	--	--	--	--	--	--	--	--
Rural	148	148	153	158	177	0/0%	5/3%	5/3%	19/12%
Farm	148	148	153	158	177	0/0%	5/3%	5/3%	19/12%
Non-farm	--	--	--	--	--	0/0%	0/0%	0/0%	0/0%
Rowan County	3375	4488	4488	4847	5235	1113/33%	0/0%	359/8%	388/8%
Out of Basin	3323	4419	4419	4772	5154	1096/33%	0/0%	353/8%	382/8%
In ORB	52	69	69	75	81	17/33%	0/0%	6/9%	6/8%
Urban	--	--	--	--	--	--	--	--	--
Rural	52	69	69	75	81	17/33%	0/0%	6/9%	6/8%
Farm	52	69	69	75	81	17/33%	0/0%	6/9%	6/8%
Non-farm	--	--	--	--	--	--	--	--	--
Trimble County	1748	1832	1892	1950	2135	84/5%	60/3%	58/3%	185/9%
Out of Basin	744	781	805	837	929	37/5%	24/3%	32/4%	92/11%
In ORB	1004	1051	1087	1113	1206	47/5%	36/3%	26/2%	93/8%
Urban	--	--	--	--	--	--	--	--	--
Rural	1004	1051	1087	1113	1206	47/5%	36/3%	26/2%	93/8%
Farm	525	525	525	525	525	0/0%	0/0%	0/0%	0/0%
Non-farm	479	526	562	588	681	47/10%	36/7%	26/5%	93/16%

EXHIBIT 3.6t (Continued) HOUSING TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Housing Units					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Union County	4423	4887	5153	5405	5944	464/10%	266/5%	252/5%	539/10%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	4423	4887	5153	5405	5944	464/10%	266/5%	252/5%	539/10%
Urban	1096	1096	1362	1614	2153	0/0%	266/24%	252/19%	539/33%
Rural	3327	3791	3791	3791	3791	464/14%	0/0%	0/0%	0/0%
Farm	2157	2621	2621	2621	2621	464/22%	0/0%	0/0%	0/0%
Non-farm	1170	1170	1170	1170	1170	0/0%	0/0%	0/0%	0/0%
Webster County	5188	5188	5242	5352	6167	0/0%	54/1%	110/2%	815/15%
Out of Basin	1096	1096	1107	1118	1247	0/0%	22/2%	11/1%	129/12%
In ORB	4092	4092	4135	4234	4920	0/0%	43/1%	99/2%	686/16%
Urban	1668	1668	2819	2918	3604	0/0%	1151/69%	99/4%	686/24%
Rural	2424	2424	1316	1316	1316	0/0%	-1108/-46%	0/0%	0/0%
Farm	1644	1644	1316	1316	1316	0/0%	-328/-20%	0/0%	0/0%
Non-farm	780	780	--	--	--	0/0%	-780/-100%	--	--

EXHIBIT 3.7t EMPLOYMENT TRENDS AND PROJECTIONS 1960 -1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Thirty-four county total	362434	502914	600996	685690	763569	140480/39%	98082/20%	84694/14%	77879/11%
Out of Basin	166987	230931	269973	312275	373001	63944/38%	39042/17%	42302/16%	60726/19%
In ORB	195447	271983	331023	373415	390568	76536/39%	59040/22%	42392/13%	17153/5%
Ballard County	758	1279	1279	1279	1279	521/69%	0/0%	0/0%	0/0%
Out of Basin	431	728	728	728	728	297/69%	0/0%	0/0%	0/0%
In ORB	327	551	551	551	551	224/69%	0/0%	0/0%	0/0%
Boone County	2396	8680	15000	21700	32800	6284/262%	6320/73%	6700/45%	11100/51%
Out of Basin	213	770	1331	1902	2545	557/262%	561/73%	571/43%	643/34%
In ORB	2183	7910	13669	19798	30255	5727/262%	5759/73%	6129/45%	10457/53%
Boyd County	14712	20115	25030	29095	33630	5403/37%	4915/24%	4065/16%	4535/16%
Out of Basin	4753	6499	8087	8848	9870	1746/37%	1588/24%	761/9%	1022/12%
In ORB	9959	13616	16943	20247	23760	3657/37%	3327/24%	3304/20%	3513/17%
Bracken County	931	909	929	949	1062	-22/-2%	20/2%	20/2%	113/12%
Out of Basin	294	287	293	284	291	-7/-2%	6/2%	-9/-3%	7/2%
In ORB	637	622	636	665	771	-15/-2%	14/2%	29/5%	106/16%
Breckinridge County	1410	1996	2088	2181	2659	586/42%	92/5%	93/4%	478/22%
Out of Basin	415	587	614	641	798	172/41%	27/5%	27/4%	157/24%
In ORB	995	1409	1474	1540	1861	414/42%	65/5%	66/4%	321/21%

EXHIBIT 3.7t (Continued) EMPLOYMENT TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Caldwell County	2176	3948	4190	4433	5580	1772/81%	242/6%	243/6%	1147/26%
Out of Basin	1452	2635	2796	2995	3905	1183/81%	161/6%	199/7%	910/30%
In ORB	724	1313	1394	1438	1675	589/81%	81/6%	44/3%	237/17%
Campbell County	13396	14763	18000	20000	22900	1367/10%	3237/22%	2000/11%	2900/15%
Out of Basin	4665	5141	6268	6968	7969	476/10%	1127/22%	700/11%	1001/14%
In ORB	8731	9622	11732	13032	14931	891/10%	2110/22%	1300/11%	1899/15%
Carroll County	1420	3263	3404	3546	4154	1843/130%	141/4%	142/4%	608/17%
Out of Basin	1145	2631	2745	2848	3496	1486/130%	114/4%	103/4%	648/23%
In ORB	275	632	659	698	658	357/130%	27/4%	39/6%	-40/-6%
Carter County	2599	2863	2863	2863	2863	264/10%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	2599	2863	2863	2863	2863	264/10%	0/0%	0/0%	0/0%
Christian County	9180	12074	13059	14045	18072	2894/32%	985/8%	986/8%	4027/29%
Out of Basin	8671	11405	12335	13336	17423	2734/32%	930/8%	1001/8%	4087/31%
In ORB	509	669	724	709	649	160/31%	55/8%	-15/-2%	-60/-8%
Crittenden County	1075	1618	1675	1734	2019	543/51%	57/4%	59/4%	285/16%
Out of Basin	157	237	245	250	277	80/51%	8/3%	5/2%	27/11%
In ORB	918	1381	1430	1484	1742	463/50%	49/4%	54/4%	258/17%

EXHIBIT 3.7t (Continued) EMPLOYMENT TRENDS AND PROJECTIONS
1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Daviess County	20746	25598	29200	35038	43700	4852/23%	3602/14%	5838/20%	8662/25%
Out of Basin	12469	15386	17551	20994	26055	2917/23%	2165/14%	3443/20%	5061/24%
In ORB	8277	10212	11649	14044	17645	1935/23%	1437/14%	2395/21%	3601/26%
Elliott County	311	515	515	515	515	204/66%	0/0%	0/0%	0/0%
Out of Basin	13	21	21	21	21	8/62%	0/0%	0/0%	0/0%
In ORB	298	494	494	494	494	196/66%	0/0%	0/0%	0/0%
Gallatin County	283	421	462	502	690	138/49%	41/10%	40/9%	188/37%
Out of Basin	56	83	91	119	116	27/48%	8/10%	28/31%	-3/-3%
In ORB	227	338	371	383	574	111/49%	33/10%	12/3%	191/50%
Greenup County	3169	4297	5500	6200	7900	1128/36%	1203/28%	700/13%	1700/27%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	3169	4297	5500	6200	7900	1128/36%	1203/28%	700/13%	1700/27%
Hancock County	263	3076	3435	3793	5467	2813/1070%	359/12%	358/10%	1674/44%
Out of Basin	58	677	756	835	377	619/1067%	79/12%	79/10%	-458/-55%
In ORB	205	2399	2679	2958	5090	2194/1070%	280/12%	279/10%	2132/72%
Hardin County	6892	12197	13061	13926	16416	5305/77%	864/7%	865/7%	2490/18%
Out of Basin	6090	10778	11541	12305	14505	4688/77%	763/7%	764/7%	2200/18%
In ORB	802	1419	1520	1621	1911	617/77%	101/7%	101/7%	290/18%

EXHIBIT 3.7t (Continued) EMPLOYMENT TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Henderson County	7366	9523	13200	16800	19500	2157/29%	3677/39%	3600/27%	2700/16%
Out of Basin	1160	1500	2079	4874	3224	340/29%	579/39%	2795/134%	-1650/-34%
In ORB	6206	8023	11121	11926	16276	1817/29%	3098/39%	805/7%	4350/37%
Henry County	1132	1720	1811	1902	2340	588/52%	91/5%	91/5%	438/23%
Out of Basin	1111	1689	1778	1867	2297	578/52%	89/5%	89/5%	430/23%
In ORB	21	31	33	35	43	10/48%	2/6%	2/6%	8/23%
Hopkins County	8841	12177	12444	12712	13973	3336/38%	267/2%	268/2%	1261/10%
Out of Basin	6094	8393	8577	8356	10879	2299/38%	184/2%	-221/-3%	2523/30%
In ORB	2747	3784	3867	4356	3094	1037/38%	83/2%	489/13%	-1262/-29%
Jefferson County	208327	286737	354391	409983	437003	78410/38%	67654/24%	55592/16%	27020/7%
Out of Basin	84998	116989	144592	174243	214568	31991/38%	27603/24%	29651/21%	40325/23%
In ORB	123329	169748	209799	235740	222435	46419/38%	40051/24%	25941/12%	-13305/-6%
Kenton County	20093	26922	30000	31800	34200	6829/34%	3078/11%	1800/6%	2400/8%
Out of Basin	15735	21084	23494	24888	26726	5349/34%	2410/11%	1394/6%	1838/7%
In ORB	4358	5838	6506	6912	7474	1480/34%	668/11%	406/6%	562/8%
Lawrence County	994	1592	1592	1592	1592	598/60%	0/0%	0/0%	0/0%
Out of Basin	917	1468	1468	1468	1468	551/60%	0/0%	0/0%	0/0%
In ORB	77	124	124	124	124	47/61%	0/0%	0/0%	0/0%

EXHIBIT 3.7t (Continued) EMPLOYMENT TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Lewis County	1069	1609	1609	1609	1609	540/51%	0/0%	0/0%	0/0%
Out of Basin	41	61	61	61	61	20/49%	0/0%	0/0%	0/0%
In ORB	1028	1548	1548	1548	1548	520/51%	0/0%	0/0%	0/0%
Livingston County	1112	1046	1081	1115	1280	-66/-6%	35/3%	34/3%	165/15%
Out of Basin	634	596	616	636	729	-38/-6%	20/3%	20/3%	93/15%
In ORB	478	450	465	479	551	-28/-6%	15/3%	14/3%	72/15%
Mason County	4697	5683	5683	5683	5683	986/21%	0/0%	0/0%	0/0%
Out of Basin	1606	1943	1943	1943	1943	337/21%	0/0%	0/0%	0/0%
In ORB	3091	3740	3740	3740	3740	649/21%	0/0%	0/0%	0/0%
McCracken County	16544	21045	21297	21550	22451	4501/27%	252/1%	253/1%	901/4%
Out of Basin	9999	12720	12872	13308	14235	2721/27%	152/1%	436/3%	927/7%
In ORB	6545	8325	8425	8242	8216	1780/27%	100/1%	-183/-2%	-26/0%
Meade County	1704	2434	2481	2527	2606	730/43%	47/2%	46/2%	79/3%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	1704	2434	2481	2527	2606	730/43%	47/2%	46/2%	79/3%
Oldham County	1366	2377	2694	3011	4506	1011/74%	317/13%	317/12%	1495/50%
Out of Basin	246	428	485	542	811	182/74%	57/13%	57/12%	269/50%
In ORB	1120	1949	2209	2469	3695	829/74%	260/13%	260/12%	1226/50%

EXHIBIT 3.7t (Continued) EMPLOYMENT TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Pendleton County	942	1551	1596	1641	1844	609/65%	45/3%	45/3%	203/12%
Out of Basin	895	1474	1517	1560	1753	579/65%	43/3%	43/3%	193/12%
In ORB	47	77	79	81	91	30/64%	2/3%	2/3%	10/12%
Rowan County	2267	4137	4499	4860	5266	1870/82%	362/9%	361/8%	406/8%
Out of Basin	2232	4074	4430	4785	5185	1842/83%	356/9%	355/8%	400/8%
In ORB	35	63	69	75	81	28/80%	6/10%	6/9%	6/8%
Trimble County	310	415	426	437	477	105/34%	11/3%	11/3%	40/9%
Out of Basin	132	177	182	188	209	45/34%	5/3%	6/3%	21/11%
In ORB	178	238	244	249	268	60/34%	6/3/%	5/2%	19/8%
Union County	2507	4108	4242	4376	4975	1601/64%	134/3%	134/3%	599/14%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	2507	4108	4242	4376	4975	1601/64%	134/3%	134/3%	599/14%
Webster County	1446	2226	2260	2293	2558	780/54%	34/2%	33/1%	265/12%
Out of Basin	305	470	477	482	537	165/54%	7/1%	5/1%	55/11%
In ORB	1141	1756	1783	1811	2021	615/54%	27/2%	28/2%	210/12%

EXHIBIT 3.8t LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Thirty Four County Total	10929	10929	10929	10929	10929	0/0%	0/0%	0/0%	0/0%
Out of Basin	5109	5109	5109	5109	5109	0/0%	0/0%	0/0%	0/0%
In ORB	5820	5820	5820	5820	5820	0/0%	0/0%	0/0%	0/0%
Rural	5445*	5390*	5355*	5309*	5156*	-55/-1%	-35/-1%	-46/-1%	-153/-3%
Agriculture	3011	2961	2929	2888	2776	-50/-2%	-32/-1%	-41/-1%	-112/-4%
Silviculture	2305	2258	2233	2206	2117	-47/-2%	-25/-1%	-27/-1%	-89/-4%
Mining Related	30	72	94	116	164	42/140%	22/31%	22/23%	48/41%
Urban	375	430	465	511	664	55/15%	35/8%	46/10%	153/30%
Construction Related	--	55	35	46	153	55/--	-20/-36%	11/31%	107/233%
Ballard County	259	259	259	259	259	0/0%	0/0%	0/0%	0/0%
Out of Basin	134	134	134	134	134	0/0%	0/0%	0/0%	0/0%
In ORB	125	125	125	125	125	0/0%	0/0%	0/0%	0/0%
Rural	123	123	123	123	123	0/0%	0/0%	0/0%	0/0%
Agriculture	86	86	86	86	86	0/0%	0/0%	0/0%	0/0%
Silviculture	37	37	37	37	37	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	2	2	2	2	2	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--

*Includes 99 sq. mi. of military area

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Boone County	249	249	249	249	249	0/0%	0/0%	0/0%	0/0%
Out of Basin	27	27	27	27	27	0/0%	0/0%	0/0%	0/0%
In ORB	222	222	222	222	222	0/0%	0/0%	0/0%	0/0%
Rural	185	179	176	173	162	-6/-3%	-3/-2%	-3/-2%	-11/-6%
Agriculture	134	128	125	122	116	-6/-4%	-3/-2%	-3/-2%	-6/-5%
Silviculture	51	51	51	51	46	0/0%	0/0%	0/0%	-5/-10%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	37	43	46	49	60	6/16%	3/7%	3/7%	11/22%
Construction Related	--	6	3	3	11	6/--	-3/-50%	0/0%	7/233%
Boyd County	159	159	159	159	159	0/0%	0/0%	0/0%	0/0%
Out of Basin	38	38	38	38	38	0/0%	0/0%	0/0%	0/0%
In ORB	121	121	121	121	121	0/0%	0/0%	0/0%	0/0%
Rural	118	108	103	98	84	-10/-8%	-5/-5%	-5/5%	-14/-14%
Agriculture	47	43	41	39	32	-4/-9%	-2/-5%	-2/-5%	-7/-18%
Silviculture	68	60	56	52	42	-8/-13%	-4/-7%	-4/-7%	-10/-19%
Mining Related	3	5	6	7	10	2/67%	1/20%	1/17%	3/43%
Urban	3	13	18	23	37	10/333%	5/38%	5/28%	14/61%
Construction Related	--	10	5	5	14	10/--	-5/-50%	0/0%	9/180%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Bracken County	204	204	204	204	204	0/0%	0/0%	0/0%	0/0%
Out of Basin	84	84	84	84	84	0/0%	0/0%	0/0%	0/0%
In ORB	120	120	120	120	120	0/0%	0/0%	0/0%	0/0%
Rural	115	115	115	115	115	0/0%	0/0%	0/0%	0/0%
Agriculture	72	72	72	72	72	0/0%	0/0%	0/0%	0/0%
Silviculture	43	43	43	43	43	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	5	5	5	5	5	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Breckenridge County	564	564	564	564	564	0/0%	0/0%	0/0%	0/0%
Out of Basin	220	220	220	220	220	0/0%	0/0%	0/0%	0/0%
In ORB	344	344	344	344	344	0/0%	0/0%	0/0%	0/0%
Rural	344	340	338	336	328	-4/-1%	-2/-1%	-2/-1%	-8/-2%
Agriculture	193	193	193	193	190	0/0%	0/0%	0/0%	-3/-2%
Silviculture	151	147	145	143	138	-4/-3%	-2/-1%	-2/-1%	-5/-3%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	4	6	8	16	4/--	2/50%	2/33%	8/100%
Construction Related	--	4	2	2	8	4/--	-2/-50%	0/0%	6/300%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Caldwell County	357	357	357	357	357	0/0%	0/0%	0/0%	0/0%
Out of Basin	158	158	158	158	158	0/0%	0/0%	0/0%	0/0%
In ORB	199	199	199	199	199	0/0%	0/0%	0/0%	0/0%
Rural	197	197	197	197	197	0/0%	0/0%	0/0%	0/0%
Agriculture	100	100	100	100	100	0/0%	0/0%	0/0%	0/0%
Silviculture	97	97	97	97	97	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	2	2	2	2	2	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Campbell County	149	149	149	149	149	0/0%	0/0%	0/0%	0/0%
Out of Basin	52	52	52	52	52	0/0%	0/0%	0/0%	0/0%
In ORB	97	97	97	97	97	0/0%	0/0%	0/0%	0/0%
Rural	85	83	82	81	78	-2/-2%	-1/-1%	-1/-1%	-3/-4%
Agriculture	63	61	60	59	57	-2/-3%	-1/-2%	-1/-2%	-2/-3%
Silviculture	22	22	22	22	21	0/0%	0/0%	0/0%	-1/-5%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	12	14	15	16	19	2/17%	1/7%	1/7%	3/19%
Construction Related	--	2	1	1	3	2/--	-1/-50%	0/0%	2/200%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Carroll County	130	130	130	130	130	0/0%	0/0%	0/0%	0/0%
Out of Basin	82	82	82	82	82	0/0%	0/0%	0/0%	0/0%
In ORB	48	48	48	48	48	0/0%	0/0%	0/0%	0/0%
Rural	44	44	44	44	44	0/0%	0/0%	0/0%	0/0%
Agriculture	30	30	30	30	30	0/0%	0/0%	0/0%	0/0%
Silviculture	14	14	14	14	14	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	4	4	4	4	4	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Carter County	402	402	402	402	402	0/0%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	402	402	402	402	402	0/0%	0/0%	0/0%	0/0%
Rural	402	394	390	386	373	-8/-2%	-4/-1%	-4/-1%	-13/ -30%
Agriculture	130	128	127	126	121	-2/-2%	-1/-1%	-1/-1%	-5/-5%
Silviculture	269	261	257	253	242	-8/-3%	-4/-2%	-4/-2%	-11/-4%
Mining Related	3	5	6	7	10	2/67%	1/20%	1/17%	3/43%
Urban	--	8	12	16	29	8/--	4/50%	4/33%	13/81%
Construction Related	--	8	4	4	13	8/--	-4/-50%	0/0%	9/225%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Christian County	726	726	726	726	726	0/0%	0/0%	0/0%	0/0%
Out of Basin	626	626	626	626	626	0/0%	0/0%	0/0%	0/0%
In ORB	100	100	100	100	100	0/0%	0/0%	0/0%	0/0%
Rural	99	99	99	99	99	0/0%	0/0%	0/0%	0/0%
Agriculture	49	49	49	49	49	0/0%	0/0%	0/0%	0/0%
Silviculture	49	49	49	49	48	0/0%	0/0%	0/0%	-1/-2%
Mining Related	1	1	1	1	2	0/0%	0/0%	0/0%	1/100%
Urban	1	1	1	1	1	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Crittenden County	365	365	365	365	365	0/0%	0/0%	0/0%	0/0%
Out of Basin	75	75	75	75	75	0/0%	0/0%	0/0%	0/0%
In ORB	290	290	290	290	290	0/0%	0/0%	0/0%	0/0%
Rural	287	287	287	287	287	0/0%	0/0%	0/0%	0/0%
Agriculture	185	185	185	185	185	0/0%	0/0%	0/0%	0/0%
Silviculture	102	102	102	102	102	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	3	3	3	3	3	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Daviess County	462	462	462	462	462	0/0%	0/0%	0/0%	0/0%
Out of Basin	342	342	342	342	342	0/0%	0/0%	0/0%	0/0%
In ORB	120	120	120	120	120	0/0%	0/0%	0/0%	0/0%
Rural	120	120	119	115	104	0/0%	-1/-1%	-4/-3%	-11/-10%
Agriculture	94	94	93	90	81	0/0%	-1/-1%	-3/-3%	-9/-10%
Silviculture	26	26	26	25	23	0/0%	0/0%	-1/-4%	-2/-8%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	1	5	16	--	1/--	4/400%	11/220%
Construction Related	--	--	1	4	11	--	1/--	4/300%	7/175%
Elliott County	240	240	240	240	240	0/0%	0/0%	0/0%	0/0%
Out of Basin	10	10	10	10	10	0/0%	0/0%	0/0%	0/0%
In ORB	230	230	230	230	230	0/0%	0/0%	0/0%	0/0%
Rural	230	230	228	226	222	0/0%	-2/-1%	-2/-1%	-4/-2%
Agriculture	69	69	68	67	66	0/0%	-1/-1%	-1/-1%	-1/-1%
Silviculture	161	161	160	159	156	0/0%	-1/-1%	-1/-1%	-3/-2%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	2	4	8	--	2/--	2/100%	4/100%
Construction Related	--	--	2	2	4	--	2/--	0/0%	2/100%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Gallatin County	100	100	100	100	100	0/0%	0/0%	0/0%	0/0%
Out of Basin	22	22	22	22	22	0/0%	0/0%	0/0%	0/0%
In ORB	78	78	78	78	78	0/0%	0/0%	0/0%	0/0%
Rural	74	74	74	74	74	0/0%	0/0%	0/0%	0/0%
Agriculture	51	51	51	51	51	0/0%	0/0%	0/0%	0/0%
Silviculture	23	23	23	23	23	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	4	4	4	4	4	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Greenup County	351	351	351	351	351	0/0%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	351	351	351	351	351	0/0%	0/0%	0/0%	0/0%
Rural	329	323	320	317	305	-6/-2%	-3/-1%	-3/-1%	-12/-4%
Agriculture	102	100	99	98	94	-2/-2%	-1/-1%	-1/-1%	-4/-4%
Silviculture	227	223	221	219	211	-4/-2%	-2/-1%	-2/-1%	-8/-4%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	22	28	31	34	46	6/27%	3/11%	3/10%	12/35%
Construction Related	--	6	3	3	12	6/--	-3/-50%	0/0%	9/300%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Hancock County	187	187	187	187	187	0/0%	0/0%	0/0%	0/0%
Out of Basin	41	41	41	41	41	0/0%	0/0%	0/0%	0/0%
In ORB	146	146	146	146	146	0/0%	0/0%	0/0%	0/0%
Rural	144	138	135	132	118	-6/-4%	-3/-2%	-3/-2%	-14/-11%
Agriculture	72	70	69	68	58	-2/-3%	-1/-1%	-1/-1%	-10/-15%
Silviculture	71	65	62	59	52	-6/-8%	-3/-5%	-3/-5%	-7/-12%
Mining Related	1	3	4	5	8	2/200%	1/33%	1/25%	3/60%
Urban	2	8	11	14	28	6/300%	3/38%	3/27%	14/100%
Construction Related	--	6	3	3	14	6/--	-3/-50%	0/0%	11/367%
Hardin County	616	616	616	616	616	0/0%	0/0%	0/0%	0/0%
Out of Basin	537	537	537	537	537	0/0%	0/0%	0/0%	0/0%
In ORB	79	79	79	79	79	0/0%	0/0%	0/0%	0/0%
Rural	74*	74*	74*	74*	74*	0/0%	0/0%	0/0%	0/0%
Agriculture	37	37	37	37	37	0/0%	0/0%	0/0%	0/0%
Silviculture	15	15	15	15	15	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	5	5	5	5	5	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--

* Includes 22 sq. mi. [illegible] military reservation area.

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Henderson County	433	433	433	433	433	0/0%	0/0%	0/0%	0/0%
Out of Basin	149	149	149	149	149	0/0%	0/0%	0/0%	0/0%
In ORB	284	284	284	284	284	0/0%	0/0%	0/0%	0/0%
Rural	264	264	264	264	263	0/0%	0/0%	0/0%	-1/0%
Agriculture	205	205	204	203	203	0/0%	-1/0%	-1/0%	0/0%
Silviculture	58	58	58	58	56	0/0%	0/0%	0/0%	-2/-3%
Mining Related	1	1	2	3	4	0/0%	1/100%	1/50%	1/33%
Urban	20	20	20	20	21	0/0%	0/0%	0/0%	1/5%
Construction Related	--	--	--	--	1	--	--	--	1/--
Henry County	289	289	289	289	289	0/0%	0/0%	0/0%	0/0%
Out of Basin	280	280	280	280	280	0/0%	0/0%	0/0%	0/0%
In ORB	9	9	9	9	9	0/0%	0/0%	0/0%	0/0%
Rural	9	9	9	8	5	0/0%	0/0%	-1/-11%	-3/-38%
Agriculture	7	7	7	6	4	0/0%	0/0%	-1/-14%	-2/-33%
Silviculture	2	2	2	2	1	0/0%	0/0%	0/0%	-1/-50%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	--	1	4	--	--	1/--	3/300%
Construction Related	--	--	--	1	3	--	--	1/--	2/200%

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS
1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Hopkins County	553	553	553	553	553	0/0%	0/0%	0/0%	0/0%
Out of Basin	273	273	273	273	273	0/0%	0/0%	0/0%	0/0%
In ORB	280	280	280	280	280	0/0%	0/0%	0/0%	0/0%
Rural	268	268	268	268	268	0/0%	0/0%	0/0%	0/0%
Agriculture	139	125	118	111	101	-14/-10%	-7/-6%	-7/-6%	-10/-9%
Silviculture	114	106	102	98	86	-8/-7%	-4/-4%	-4/-4%	-12/-12%
Mining Related	15	37	48	59	81	22/147%	11/30%	11/23%	22/37%
Urban	12	12	12	12	12	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Jefferson County	375	375	375	375	375	0/0%	0/0%	0/0%	0/0%
Out of Basin	205	205	205	205	205	0/0%	0/0%	0/0%	0/0%
In ORB	170	170	170	170	170	0/0%	0/0%	0/0%	0/0%
Rural	--	--	--	--	--	--	--	--	--
Agriculture	--	--	--	--	--	--	--	--	--
Silviculture	--	--	--	--	--	--	--	--	--
Mining Related	--	--	--	--	--	--	--	--	--
Urban	170	170	170	170	170	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Kenton County	165	165	165	165	165	0/0%	0/0%	0/0%	0/0%
Out of Basin	144	144	144	144	144	0/0%	0/0%	0/0%	0/0%
In ORB	21	21	21	21	21	0/0%	0/0%	0/0%	0/0%
Rural	2	2	2	2	2	0/0%	0/0%	0/0%	0/0%
Agriculture	2	2	2	2	2	0/0%	0/0%	0/0%	0/0%
Silviculture	--	--	--	--	--	--	--	--	--
Mining Related	--	--	--	--	--	--	--	--	--
Urban	19	19	19	19	19	0/0%	0/0%	0/0%	0/0%
Construction Related	--	--	--	--	--	--	--	--	--
Lawrence County	425	425	425	425	425	0/0%	0/0%	0/0%	0/0%
Out of Basin	385	385	385	385	385	0/0%	0/0%	0/0%	0/0%
In ORB	40	40	40	40	40	0/0%	0/0%	0/0%	0/0%
Rural	40	40	40	40	40	0/0%	0/0%	0/0%	0/0%
Agriculture	12	12	12	12	12	0/0%	0/0%	0/0%	0/0%
Silviculture	28	28	28	28	28	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	--	--	--	--	--	--	--
Construction Related	--	--	--	--	--	--	--	--	--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Lewis County	486	486	486	486	486	0/0%	0/0%	0/0%	0/0%
Out of Basin	22	22	22	22	22	0/0%	0/0%	0/0%	0/0%
In ORB	464	464	464	464	464	0/0%	0/0%	0/0%	0/0%
Rural	461	457	455	453	450	-4/-1%	-2/0%	-2/0%	-3/-1%
Agriculture	205	203	202	201	200	-2/-1%	-1/0%	-1/-1%	-1/-1%
Silviculture	256	254	253	252	250	-2/-1%	-1/0%	-1/0%	-2/-1%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	3	7	9	11	14	4/133%	2/29%	2/22%	3/27%
Construction Related	--	4	2	2	3	4/--	-2/-50%	0/0%	1/50%
Livingston County	312	312	312	312	312	0/0%	0/0%	0/0%	0/0%
Out of Basin	166	166	166	166	166	0/0%	0/0%	0/0%	0/0%
In ORB	146	146	146	146	146	0/0%	0/0%	0/0%	0/0%
Rural	146	146	146	146	146	0/0%	0/0%	0/0%	0/0%
Agriculture	94	94	94	94	94	0/0%	0/0%	0/0%	0/0%
Silviculture	52	52	52	52	52	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	--	--	--	--	--	--	--
Construction Related	--	--	--	--	--	--	--	--	--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Mason County	238	238	238	238	238	0/0%	0/0%	0/0%	0/0%
Out of Basin	152	152	152	152	152	0/0%	0/0%	0/0%	0/0%
In ORB	86	86	86	86	86	0/0%	0/0%	0/0%	0/0%
Rural	86	85	84	83	79	-1/-1%	-1/-1%	-1/-1%	-4/-5%
Agriculture	54	54	54	54	51	0/0%	0/0%	0/0%	-3/-6%
Silviculture	32	31	30	29	28	-1/-3%	-1/-3%	-1/-3%	-1/-3%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	1	2	3	7	1/--	1/100%	1/50%	4/133%
Construction Related	--	1	1	1	4	1/--	0/0%	0/0%	3/300%
McCracken County	250	250	250	250	250	0/0%	0/0%	0/0%	0/0%
Out of Basin	101	101	101	101	101	0/0%	0/0%	0/0%	0/0%
In ORB	149	149	149	149	149	0/0%	0/0%	0/0%	0/0%
Rural	122	122	122	122	118	0/0%	0/0%	0/0%	-4/-3%
Agriculture	83	83	83	83	80	0/0%	0/0%	0/0%	-3/-4%
Silviculture	39	39	39	39	38	0/0%	0/0%	0/0%	-1/-3%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	27	27	27	27	31	0/0%	0/0%	0/0%	4/15%
Construction Related	--	--	--	--	4	--	--	--	4/--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Meade County	305	305	305	305	305	0/0%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	—	--
In ORB	305	305	305	305	305	0/0%	0/0%	0/0%	0/0%
Rural	300*	296*	294*	292*	288*	-4/-1%	-2/-1%	-2/-1%	-4/-1%
Agriculture	163	159	157	155	153	-4/-2%	-2/-1%	-2/-1%	-2/-1%
Silviculture	102	102	102	102	100	0/0%	0/0%	0/0%	-2/-2%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	5	9	11	13	17	4/80%	2/22%	2/18%	4/31%
Construction Related	--	4	2	2	4	4/ --	-2/-50%	0/0%	2/100%
Oldham County	184	184	184	184	184	0/0%	0/0%	0/0%	0/0%
Out of Basin	58	58	58	58	58	0/0%	0/0%	0/0%	0/0%
In ORB	126	126	126	126	126	0/0%	0/0%	0/0%	0/0%
Rural	126	126	122	111	80	0/0%	-4/-3%	-11/-9%	-31/-28%
Agriculture	99	99	95	85	60	0/0%	-4/-4%	-10/-11%	-25/-29%
Silviculture	27	27	27	26	20	0/0%	0/0%	-1/-4%	-6/-23%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	4	15	46	0/0%	4/--	11/275%	31/207%
Construction Related	--	--	4	11	31	--	4/--	7/175%	20/182%

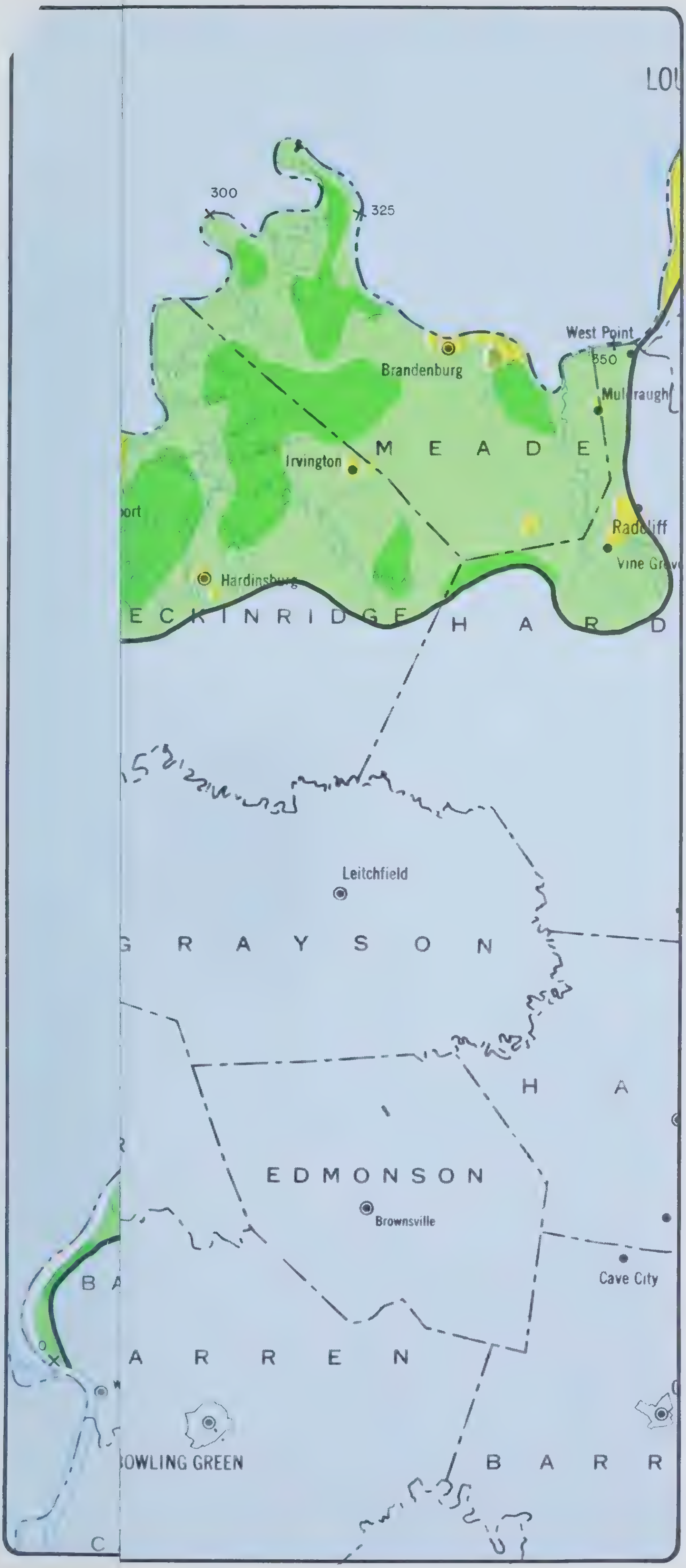
* Includes 35 sq. mi. [illegible] military reservation area.

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS
1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Pendleton County	279	279	279	279	279	0/0%	0/0%	0/0%	0/0%
Out of Basin	259	259	259	259	259	0/0%	0/0%	0/0%	0/0%
In ORB	20	20	20	20	20	0/0%	0/0%	0/0%	0/0%
Rural	20	20	20	20	20	0/0%	0/0%	0/0%	0/0%
Agriculture	14	14	14	14	14	0/0%	0/0%	0/0%	0/0%
Silviculture	6	6	6	6	6	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	--	--	--	--	--	--	--
Construction Related	--	--	--	--	--	--	--	--	--
Rowan County	290	290	290	290	290	0/0%	0/0%	0/0%	0/0%
Out of Basin	280	280	280	280	280	0/0%	0/0%	0/0%	0/0%
In ORB	10	10	10	10	10	0/0%	0/0%	0/0%	0/0%
Rural	10	10	10	10	10	0/0%	0/0%	0/0%	0/0%
Agriculture	5	5	5	5	5	0/0%	0/0%	0/0%	0/0%
Silviculture	5	5	5	5	5	0/0%	0/0%	0/0%	0/0%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	--	--	--	--	--	--	--	--	--
Construction Related	--	--	--	--	--	--	--	--	--

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Trimble County	146	146	146	146	146	0/0%	0/0%	0/0%	0/0%
Out of Basin	47	47	47	47	47	0/0%	0/0%	0/0%	0/0%
In ORB	99	99	99	99	99	0/0%	0/0%	0/0%	0/0%
Rural	95	95	95	95	90	0/0%	0/0%	0/0%	-5/-5%
Agriculture	57	57	57	57	56	0/0%	0/0%	0/0%	-1/-2%
Silviculture	38	38	38	38	34	0/0%	0/0%	0/0%	-4/-11%
Mining Related	--	--	--	--	--	--	--	--	--
Urban	4	4	4	4	9	0/0%	0/0%	0/0%	5/125%
Construction Related	--	--	--	--	5	--	--	--	5/--
Union County	340	340	340	340	340	0/0%	0/0%	0/0%	0/0%
Out of Basin	--	--	--	--	--	--	--	--	--
In ORB	340	340	340	340	340	0/0%	0/0%	0/0%	0/0%
Rural	330	328	327	326	321	-2/-1%	-1/0%	-1/0%	-5/-2%
Agriculture	272	264	260	256	246	-8/-3%	-4/-2%	-4/-2%	-10/-4%
Silviculture	56	54	53	52	50	-2/-4%	-1/-2%	-1/-2%	-2/-4%
Mining Related	2	10	14	18	25	8/400%	4/40%	4/29%	7/39%
Urban	10	12	13	14	19	2/20%	1/8%	1/8%	5/36%
Construction Related	--	2	1	1	5	2/--	-1/-50%	0/0%	4/400%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Brandenburg
Muldraugh
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Irvington
port
Radcliff
Vine Gr
Hardinsburg
ECKINRIDGE
H A R D
Leitchfield
G R A Y S O N
H A
EDMONSON
Brownsville
Cave City
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BOWLING GREEN
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

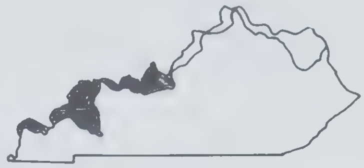


EXHIBIT 3.9m-1

LAND USE

LEGEND

- - - - COUNTY OUTLINES
~ STREAMS
━ BASIN OUTLINE
+ RIVER MILES

LAND USE

🟩 AGRICULTURE
🟩 SILVICULTURE
🟫 MINING RELATED
🟨 URBAN

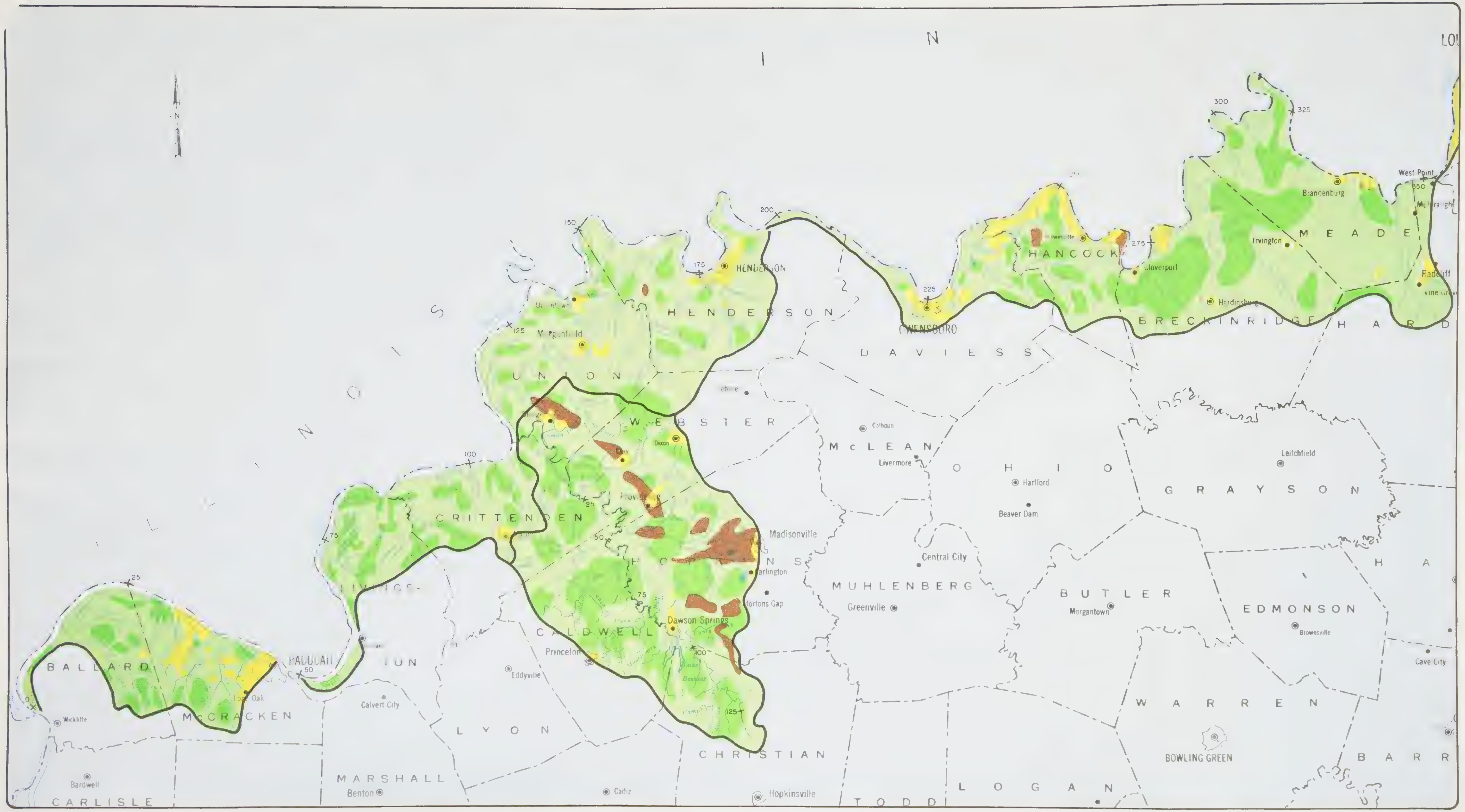
5 0 10 20
GRAPHIC SCALE IN MILES

Base Data: U. S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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McCRACKEN
Wickliffe
Lone Oak
PADUCAH
Bardwell
CARLISLE
LIVINGSTON
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UNION
Morganfield
Uniontown
HENDERSON
Henderson
WEBSTER
Dixon
Providence
HOPKINS
Madisonville
Earlington
Mortons Gap
Dawson Springs
CALDWELL
Princeton
Eddyville
LYON
Calvert City
MARSHALL
Benton
Cadiz
CHRISTIAN
Hopkinsville
TODD
LOGAN
McLEAN
Calhoun
Livermore
Sebree
DAVIESS
OWENSBORO
HANCOCK
Hawesville
OHIO
Hartford
Beaver Dam
MUHLENBERG
Central City
Greenville
BUTLER
Morgantown
GRAYSON
Leitchfield
EDMONSON
Brownsville
WARREN
BOWLING GREEN
BARREN
Cave City
HART
HARDIN
Radcliff
Vine Grove
BRECKINRIDGE
Cloverport
Hardinsburg
Irvington
MEADE
Brandenburg
West Point
Muldraugh
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350

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

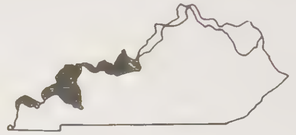

EXHIBIT 3.9m-1

LAND USE

LEGEND

- COUNTY OUTLINES
- STREAMS
- BASIN OUTLINE
- + RIVER MILES

LAND USE

- 🟩 AGRICULTURE
- 🟩 SILVICULTURE
- 🟫 MINING RELATED
- 🟨 URBAN

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Base Data U.S. Geological Survey

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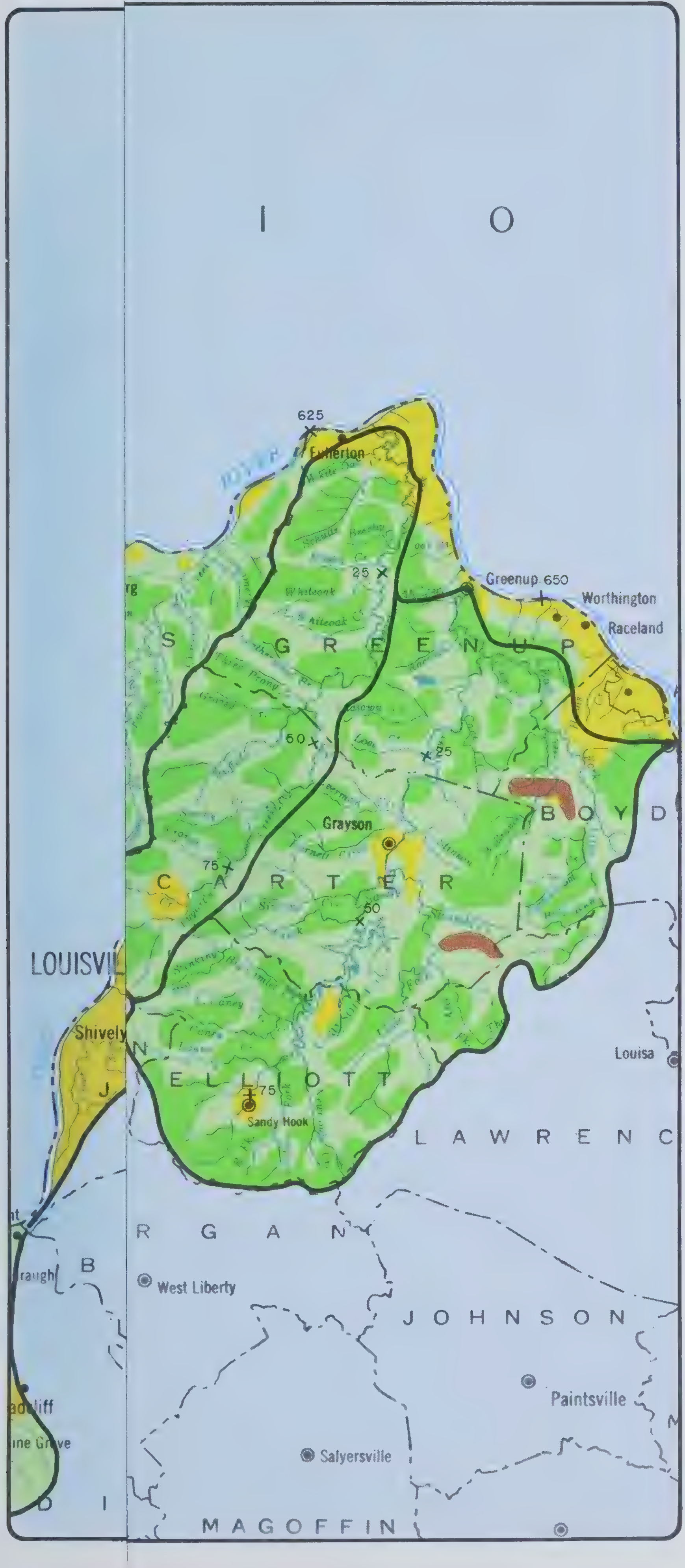
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Greenup 650
Worthington
Raceland
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G R E E N U P
S
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Grayson
B O Y D
75
C A R T E R
50
LOUISVIL
Shively
J
E L L I O T T
75
Sandy Hook
Louisa
L A W R E N C
R G A N
B
West Liberty
J O H N S O N
Paintsville
Salyersville
M A G O F F I N

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 3.9m-2

LAND USE

LEGEND

- — · — · — COUNTY OUTLINES
- ～ STREAMS
- ━ BASIN OUTLINE
- + 25 RIVER MILES

LAND USE

- 🟩 AGRICULTURE
- 🟩 SILVICULTURE
- 🟫 MINING RELATED
- 🟨 URBAN

5 0 10 20

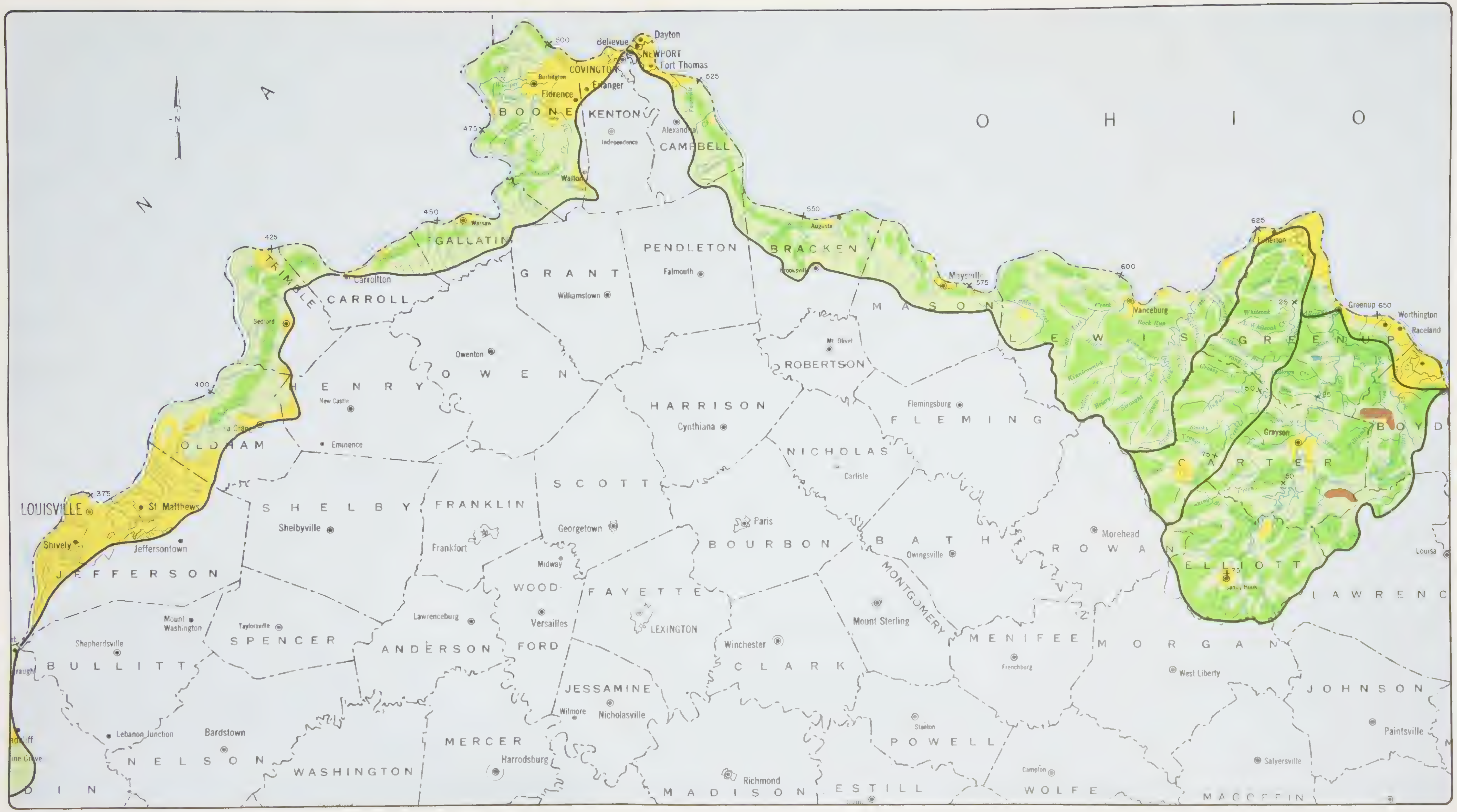
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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Dayton
NEWPORT
Fort Thomas
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Burlington
COVINGTON
Erlanger
Florence
BOONE
KENTON
Alexandria
CAMPBELL
475
Independence
Walton
450
Warsaw
GALLATIN
425
TRIMBLE
Carrollton
CARROLL
GRANT
Williamstown
PENDLETON
Falmouth
550
Augusta
BRACKEN
Brooksville
Maysville
575
MASON
600
Vanceburg
Rock Run
LEWIS
625
Fullerton
GREENUP
Greenup 650
Worthington
Raceland
Bedford
Owenton
OWEN
HENRY
New Castle
400
La Grange
OLDHAM
Eminence
Mt. Olivet
ROBERTSON
HARRISON
Cynthiana
Flemingsburg
FLEMING
Grayson
BOYD
CARTER
NICHOLAS
Carlisle
375
LOUISVILLE
St. Matthews
Shively
Jeffersontown
JEFFERSON
SHELBY
Shelbyville
FRANKLIN
Frankfort
SCOTT
Georgetown
Paris
BOURBON
BATH
Owingsville
Morehead
ROWAN
ELLIOTT
Sandy Hook
Louisa
LAWRENCE
Midway
WOODFORD
Versailles
FAYETTE
LEXINGTON
Mount Washington
Taylorsville
SPENCER
Shepherdsville
BULLITT
Lawrenceburg
ANDERSON
Winchester
CLARK
Mount Sterling
MONTGOMERY
MENIFEE
Frenchburg
MORGAN
West Liberty
JOHNSON
Paintsville
JESSAMINE
Wilmore
Nicholasville
Stanton
POWELL
Lebanon Junction
Bardstown
NELSON
WASHINGTON
MERCER
Harrodsburg
Richmond
MADISON
ESTILL
Campton
WOLFE
Salyersville
MAGOFFIN

OHIO RIVER BASIN AND MINOR TRIBUTARIES

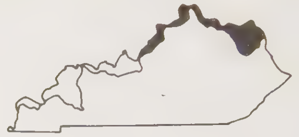

EXHIBIT 3.9m-2

LAND USE

LEGEND

-·-·- COUNTY OUTLINES

〰 STREAMS

━ BASIN OUTLINE

+ 25 RIVER MILES

LAND USE

🟩 AGRICULTURE

🟩 SILVICULTURE

🟫 MINING RELATED

🟨 URBAN

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago

EXHIBIT 3.8t (Continued) LAND USE TRENDS AND PROJECTIONS 1960-1995 FOR THE OHIO RIVER BASIN

Area of Coverage	At Year or Projected Land Area (sq. mi.)					Between Year Number/% Change			
	1960	1970	1975	1980	1995	1960-70	1970-75	1975-80	1980-95
Webster County	339	339	339	339	339	0/0%	0/0%	0/0%	0/0%
Out of Basin	140	140	140	140	140	0/0%	0/0%	0/0%	0/0%
In ORB	199	199	199	199	199	0/0%	0/0%	0/0%	0/0%
Rural	196	194	193	192	189	-2/-1%	-1/-1%	-1/-1%	-3/-2%
Agriculture	128	124	122	120	112	-4/-3%	-2/-2%	-2/-2%	-8/-7%
Silviculture	64	60	58	56	53	-4/-6%	-2/-3%	-2/-3%	-3/-5%
Mining Related	4	10	13	16	24	6/150%	3/33%	3/23%	8/50%
Urban	3	5	6	7	10	2/67%	1/20%	1/17%	3/43%
Construction Related	--	2	1	1	3	2/--	-1/-50%	0/0%	2/200%

BASIN WASTEWATER CONTROL

There are three categories of point-source wastewater discharges in the Ohio River Basin, namely municipal, domestic and industrial. Wastewater discharges from incorporated towns and cities are considered as municipal. Wastewater discharges from private subdivisions, trailers, schools, hospitals and commercial establishments are considered as domestic. Wastewater from manufacturing processes are considered as industrial. Existing discharge characteristics of all point source discharges are presented in Appendix B.

Methods of collection, treatment and disposal of the wastewater in the Ohio River Basin depend primarily on to what category the wastewater falls. The most common methods practiced in the basin for collection, treatment and disposal for each category are briefly described here.

Municipal Wastewater:

Separate sanitary sewers are primarily used for collection of municipal wastewater for the smaller incorporated towns and urban areas in the basin. Combined sewers are used for collecting wastewater for the 10 larger municipal districts in the basin. These are:

1. Ashland
2. Campbell-Kenton
3. Carrolton
4. Covington
5. Henderson
6. Louisville
7. Maysville
8. Owensboro
9. Paducah
10. Vanceburg

There are two distinct trends in municipal wastewater treatment in the Ohio River Basin due to the vastly different assimilative capacities of the Ohio River Main Stem and its minor tributaries. Municipal treatment plants along the Ohio River Main Stem until recently have been, for the most part, primary treatment plants. The upgrading of these plants, much of which is presently underway, consists of adding an activated sludge process to the existing primary plants.

There are 17 municipal plants on the Ohio River Main Stem. Of these, 11 are primary plants, 5 are secondary activated sludge plants, and one is a lagoon. Of the 11 primary plants, 6 are presently being upgraded or abandoned in the move to secondary treatment. Activated sludge treatment will be used in 5 of the 6 plants under instruction and the 6th plant will be using a fixed film biological treatment process.

Treatment plants on the minor tributaries to the Ohio River are mostly secondary high rate trickling filters. Of the 30 municipal plants on the tributaries 15 are trickling filters, 8 are activated sludge, 3 are lagoons, 3 are primary and one is advanced. Of the three primary plants two are being regionalized with two existing secondary activated sludge plants and one is being converted to an activated sludge process.

The general trend throughout the basin is toward using an activated sludge process when primary plants are upgraded or when new plants are installed. Major considerations in deciding upon the best process for specific needs are: capital, operation and maintenance costs, degree of treatment required, type of waste to be treated, reliability of effluent characteristics, and flexibility for expansion.

Treated municipal wastewater for the 17 plants on the Ohio River are discharged into the Ohio River. Of the 30 remaining municipal discharges, 22 are discharged into minor tributaries to the Ohio River, 7 are discharged into the Tradewater River and its tributaries, 2 are discharged into the Little Sandy River and 1 to Tygarts Creek.

Domestic Wastewater:

There are 166 significant domestic discharges in the Ohio River Basin. Of these, 143 utilize extended aeration package plants, 14 use septic tanks and sand filters, 3 use Imhoff Tanks and trickling filters, 3 use only trickling filters, 1 uses activated sludge, 1 uses rated aeration, and 1 uses lagoons for treating wastewater.

Of the 166 plants, treated wastewater from 126 are discharged into small tributaries of the Ohio River, 11 are discharged into the Tradewater River and its tributaries, 21 are discharged into the Little Sandy River and its tributaries, and 8 are discharged into Tygarts Creek and its tributaries.

Industrial Wastewater:

Type of treatment processes for industrial wastewater varies depending on the character of the wastewater. There are 46 significant industrial waste discharges in the Ohio River Basin. Of these, 15 use extended aeration package plants, 12 use only primary treatment, 3 use cyanide precipitation and sedimentation, and the rest use widely varying processes. Four of the industries discharge only cooling water. Wastewater from these four industries are treated in local municipal plants.

Treated wastewater from 24 of the industries are discharged into the Ohio River, 18 are discharged into minor Ohio River tributaries, 2 are discharged into the Tradewater River and its tributaries, and 2 are discharged into the Little Sandy River and its tributaries.

EXISTING WATER QUALITY

Existing water quality in the Ohio River Basin can best be described in terms of water quality in the Ohio River main stem and Ohio River tributaries. A brief description of water quality in the main stem and in the tributaries is presented here.

Water Quality in Ohio River Main Stem:

Recorded chemical and physical data indicate several pollution problems in the Ohio River. One area of concern is the high level of total and fecal coliform. Measurements indicate very high coliform levels along the entire stretch of the river, with peak levels below high density population centers. Bacteriologically, the most polluted area is at Cane Run, downstream from the Louisville sewage treatment plant, where median summertime concentrations of total coliforms reach 650,000 per 100 ml. and fecal coliforms reach 47,000 per 100 ml. In summertime, total and fecal coliforms are also excessively high below Cincinnati. The standard set by the Ohio River Valley Water Sanitation Commission (ORSANCO) of 2400 coliform organisms per 100 ml. is violated at a considerable number of locations in both winter and summer. The average location on the Ohio registers total coliform counts higher than 88,000 per 100 ml. in 15 percent of winter observations and 238,000 per 100 ml. in 15 percent of summer observations.

A second area of concern is high iron and manganese concentrations. The median dissolved manganese levels (60 μg/L to 90 μg/L, depending on season) are higher than the Public Health Service standard of 50 μg/L for drinking water. The dissolved iron concentrations in most of the Ohio River considered in this study is lower than the Public Health Service standard for dissolved iron concentration of 300 μg/L. However, this standard is exceeded near the mouth of the river. Median concentrations of 510 μg/L in the summer and 1800 μg/L in winter are measured in the reach between Brandenburg and Cairo.

No nuisance algae growths have been reported on the Ohio River, probably because of natural inhibiting factors such as turbidity. However, chemical tests for nitrogen and phosphorus show that in-stream nutrients are available for algae and provide evidence of biological activity.

Dissolved oxygen levels are generally well above standards set for the river except for minor violations at specific locations during the summer months. Measurements taken by ORSANCO during the summer of 1974 indicate DO levels below 5 mg/L at Cincinnati, Louisville, and Evansville. DO levels below 4 mg/L are also measured in the pool behind the Markland Dam.

Water Quality in Minor Tributaries:

Available water quality data on the minor tributaries are limited. Only in a few instances DO measurements are reported. Most stations report nitrite, phosphate, carbonate, sulphate and pH levels in the streams. Based on the limited data available it appears that major water quality problems in the tributaries relate to low DO, high sulphate and low pH level. DO levels in the Tradewater River fall below 5 mg/L and in Humphreys Creek goes as low as 1.3 mg/L. These are the only two tributaries for which DO data are available. Sulphate levels are high and pH levels are low in the Tradewater River, the Little Sandy River, Blackford Creek and Pup Creek indicating pollution from acid mine drainage. The level of pH in the Tradewater goes as low as 3.2. This high level of acid together with increased dissolved solids and sediment loads due to coal mining operations have led in some instances to the destruction of fish and aquatic life. It has also rendered the affected water undesirable for public, industrial or domestic supplies.

Applicable Standards

Surface water quality standards represent a means by which polluted waters can be compared with a fixed standard of quality. These standards consist of 2 parts: the stream use classification and water quality criteria.

The stream use classification is a designation of all or part of a stream for a specific use. The present and planned uses of the water resources dictate this classification. The water quality criteria are limits set on the chemical, biological and thermal quality of the stream. These limits are usually expressed in terms of concentration, but may also allude the absence of odors, floating material, and aesthetic quality.

The Federal Water Pollution Control Act authorized the States to establish Water Quality Standards. These standards are deemed to be adequate for protecting the public health welfare, enhance the quality of water and serve the expressed purposes and aims of the Federal Water Pollution Control Act.

The Commonwealth of Kentucky adopted the present water quality standards, Water Quality Standards for Waters of the Commonwealth of Kentucky, on July 23, 1971. A modification to these standards was adopted November 5, 1973. This modification, part of Use Classification of Waters, Treatment Requirements, and Compliance, reclassifies all waters shown on the map "Streams of Kentucky", to be classified for all uses.

certain dates.

5. 401 KAR 5:045, Minimum Degree of Treatment: Requires a minimum of secondary treatment for facilities which receive biodegradable wastes and treatment in excess of secondary in certain situations. This regulation requires that existing facilities receiving such wastes reapply to the Department for Natural Resources and Environmental Protection prior to January 1, 1976 for a permit to continue operating. The complete text is included at the end of this section.

The water quality standards used in evaluating stream data or compiling water quality violations were those of KRS 224, 401 KAR 5:005 through 401 KAR 5:045, Water Quality Standards for Waters of the Commonwealth of Kentucky, outlined above. The application of these standards in this report is to all surface waters including those not shown on the map "Streams of Kentucky".

In order to protect surface waters which are within the established standards, an anti-degradation statement was adopted March 5, 1971 and was included in the new regulations under 401 KAR 5:035, Section 6.

The Antidegradation Statement basically holds that all waters whose quality exceeded the criteria outlined in the regulations would be maintained at this high quality level, unless it was demonstrated that a lowering in those waters' quality was justifiable.

The Department for Natural Resources and Environmental Protection is in the process of implementing five new water quality regulations that will basically replace the existing documents. These five new regulations were adopted on March 13, 1975, published in the Administrative Register of Kentucky on April 1, 1975, and were commented on in a public hearing held May 13 and 14, 1975 in the Auditorium of the Capitol Plaza Tower in Frankfort, Kentucky. A brief summary of these five new regulations follows:

1. 401 KAR 5:005, Permits: Requires a permit prior to construction and operation of a wastewater system and sets forth requirements for receiving a permit to construct and operate such a system.
2. 401 KAR 5:015, Emergency Episodes: Requires that spills and bypasses from waste treatment facilities be reported to the Department for Natural Resources and Environmental Protection.
3. 401 KAR 5:025, Water Quality Criteria: Provides narrative water quality standards for all waters and sets forth a use classification scheme with numeric criteria for applicable waters.
4. 401 KAR 5:035, Stream Classification and Treatment Technology: Applies to the use classifications found in Sections 3 through 9 of 401 KAR 5:025 to certain waters. Additionally, this regulation mandates that all persons discharging pollutants through point sources shall apply "best practicable control technology" and "best available technology economically achievable" by

Section 1. Prohibitions
Section 2. Minimum Conditions for All Waters
Section 3. Stream Use Classification
Section 4. Public Water Supply
Section 5. Industrial Water Supply
Section 6. Aquatic Life
Section 7. Put-and Take Trout Streams
Section 8. Recreation
Section 9. Agricultural Uses
Section 10. Multiple Uses

401 KAR 5:035 STREAM CLASSIFICATIONS AND TREATMENT TECHNOLOGY

Section 1. Classified Streams
Section 2. Applicability
Section 3. Existing and New Discharges
Section 4. Review of Existing Facilities
Section 5. Permit Denial

401 KAR 5:045 MINIMUM DEGREE OF TREATMENT

Section 1. Definitions
Section 2. Minimum Degree of Treatment for Biochemically Degradable Waste
Section 3. Definition of Secondary Treatment
Section 4. Treatment in Excess of Secondary Treatment
Section 5. Reapplication for Permits

The applicable water quality standards in the State of Kentucky are determined by the 'Water Quality Control Regulations' outlined in the Administrative Register of Kentucky Volume 1, No. 9 published April 1, 1975 and are reproduced here.

WATER QUALITY CONTROL REGULATIONS

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401 KAR 5:005 PERMITS

Section 1. Definitions
Section 2. Prohibitions
Section 3. The Permit
Section 4. Permit Application
Section 5. The Application
Section 6. Plans and Specifications
Section 7. Design Considerations
Section 8. Application: Other Supporting Documents
Section 9. Operations

401 KAR 5:015 EMERGENCY EPISODES

Section 1. By-Passes
Section 2. Emergency Spills
Section 3. Data to be Reported
Section 4. Notification
Section 5. Penalties

DEPARTMENT FOR NATURAL RESOURCES
Bureau of Environmental Quality
Division of Water Quality
(401 KAR 5:005)

RELATES TO: KRS Chapter 224
PURSUANT TO: KRS Chapters 13.082, 224.033(17)
SUPERSEDES: WP-1

NECESSITY AND FUNCTION: This regulation embodies requirements needed to effectuate KRS Chapter 224, permit authority for sewage systems. The regulation requires a permit prior to construction and operation of a sewage system and sets forth requirements for receiving a permit to construct and operate such a system.

Section 1. Definitions. (1) "Department," means the Department for Natural Resources and Environmental Protection.

(2) "Division," means the Division of Water Quality.

(3) "Establishment," means any industrial plant, mill, factory, tannery, paper or pulp mill, mine or mineral processing or producing facility, quarry, oil refinery, boat, vessel or other type of commercial, manufacturing or industrial works or facility in the operation of which sewage, industrial wastes or other wastes are produced, or stored.

(4) "Facility," means a sewage system as defined in KRS 224.005(15).

(5) "Industrial wastes," means any liquid, or other waste resulting from any process of industry, manufacture, trade or business, for from the depletion of any natural resource.

(6) "Other wastes," means sawdust, bark or other wood debris, garbage, refuse, ashes, offal, tar, oil, chemicals, acid drainage, wastes from agricultural enterprises, and all other foreign substances not included within the above definitions of industrial wastes and sewage which may cause or contribute to the pollution of any waters of the Commonwealth.

(7) "Permit," means permission in whatever form by the department to construct and operate a facility.

(8) "Professional engineer" or "engineer," means a person registered to practice engineering pursuant to KRS Chapter 322.

(9) "Sewage," means the water-carried human or animal wastes from residences, buildings, industrial establishments or other places together with such industrial wastes, underground, surface, storm or other water, as may be present.

Section 2. Prohibition. No person shall construct, modify or operate a facility without having received a permit from the department.

Section 3. The Permit. (1) A permit to construct a facility shall be effective upon issuance unless otherwise conditioned. If construction is not commenced within the twelve (12) months following a permit's issuance, a new permit shall be obtained prior to any construction.

(2) A permit to construct a facility shall automatically become an operational permit when:

(a) The applicant notifies the department that the facility has been properly constructed; and,

(b) A departmental representative inspects the site and determines that the facility is properly operating.

(3) The applicant shall notify the department in writing within thirty (30) days of completed construction and commencement of trial operation.

(4) Permits may contain special conditions not found in this regulation. Such conditions shall be in writing and treated as a part of a permit.

(5) Issuance of a permit represents a judgment of the department that a proposed facility will protect water quality or achieve certain effluent reductions if constructed in accordance with approved plans and specifications. Construction shall be in accord with approved plans and specifications.

Section 4. Permit Application. An application for a permit shall be submitted not less than thirty days prior to the date a permit is desired.

Section 5. The Application; Preliminary Considerations. (1) Where a river basin plan, an areawide waste management plan and/or a regional or facility plan has been developed, the applicant shall provide the department with a statement, from the agency developing any such plan, that the applicant's proposed facility is compatible with any applicable plan.

(2) Any proposed facility with a projected capacity of 50,000 gallons per day, or more, shall submit a preliminary or facilities plan to the department. Said plan shall include:

(a) A seven and one-half (7 1/2) minute, United States Geological Survey topographic map with the projected service area outlined and the discharge point identified thereon.

(b) A schematic of the facility layout and detailed explanation of the proposed facility and its method of operation;

(c) All wastes shall be identified in regard to the processes giving rise to the waste, the character and quantity of the waste, its treatability; and

(d) A statement regarding the expected degree of reduction in pollution load to be accomplished by the facility.

(3) Where the discharge point of a proposed facility fails to coincide with a well defined wet weather stream, the applicant shall demonstrate that he has a legal right to discharge his effluent across any servient estate which comes between the point of discharge and a well defined wet weather stream. The department may require the applicant to provide it with an opinion of counsel to that effect.

Section 6. Plans and Specifications. (1) Not less than three (3) sets of detailed plans and specifications shall be submitted to the department. Said submittal shall be accompanied by a completed permit application form provided by the department.

(2) The department may request such additional information as it needs to evaluate the facility.

(3) Once departmental approval is obtained, no changes shall be made to the plans and specifications which would alter or affect the location, type of process or quality of effluent without prior written approval from the department.

(4) Where a proposed or existing facility is part of or may become a part of a comprehensive sewer system and has a projected capacity of 50,000 gallons per day or more, the plans and specifications shall be prepared by a professional engineer. Such plans shall be accompanied by hydraulic and sanitary engineering design calculations.

Section 7. Design Considerations. (1) Specific design criteria for any facility shall be controlled by current engineering practice. Some references to current engineering practice can be found in the following: "Guidelines for Design, Operation and Maintenance of Waste Water Treatment," by the United

States Environmental Protection Agency, and by the latest edition of "Recommended Standards for Sewage Works of the Great Lake-Upper Mississippi River Board of Sanitary Engineers;" and the Water Pollution Control Federation's "Manual of Practice No. 8 and 9."

(2) Consideration should be given to the treatment requirements of the United States Environmental Protection Agency for specific types of facilities and processes.

(3) The applicant shall demonstrate to the department that the effluent from a proposed facility will:

(a) Protect those minimum conditions applicable to all waters of the Commonwealth found in Section 2 of 401 KAR 5:025;

(b) Not cause those waters classified by 401 KAR 5:035 to be of lesser quality than the numeric criteria applicable to those waters in Sections 3 to 9 of 401 KAR 5:025; and

(c) Accord with any general or particular facility requirement mandated by other regulations. An example of a general facility requirement is the "best practicable control technology" found in 401 KAR 5:035.

(4) A recording flow measuring device shall be installed at any facility with a design flow of 50,000 gallons per day, or more. Plants with less capacity may estimate flow from a measuring device at the plant.

(5) Infiltration/Exfiltration:

(a) The access of ground water or loss of waste from a sewer system will be limited to 250 gallons per inch diameter per day with a maximum of 6,000 gallons per day regardless of the pipe diameter. This limitation is inclusive of manholes, sewers, and appurtenances.

(b) The integrity of a new system shall be verified by means of either smoke testing or low pressure air testing or both testing methods. The use of smoke testing shall depend on prevailing ground water conditions at the time of testing. Sewers over eighteen (18) inches in diameter shall be tested by the exfiltration method and smoke testing if ground water conditions permit.

(6) Inflow: No new combined, extension or replacement of combined sewers shall be permitted. All points of access of inflow to a separate sanitary system will be identified and eliminated.

Section 8. Application; Other Supporting Documents. (1) The applicant shall demonstrate that provision has been made for continuous inspection of a facility under construction to assure its conformity with approved plans and specifications. Those facilities designed by an engineer shall be inspected by an engineer.

(2) The applicant shall demonstrate that laboratory services shall be provided for self-monitoring to assure facility operation in accord with any permit conditions and to substantiate protection of the receiving waters.

(3) Where a proposed facility will serve multiple users, the applicant shall demonstrate the financial ability to guarantee continuous operation and maintenance to the department's satisfaction. Such guarantee may take the form of a supporting promise by another person to operate the facility if the applicant fails to properly do so, or by posting a bond payable or depositing money in escrow to be available for making necessary repairs only upon the department's determination that the facilities' operation and maintenance is not achieving permit conditions.

Section 9. Operation. (1) The department's permit may specify the type of analysis required for a facility and the frequency that such analysis shall be performed and reported to the department.

(2) The department may provide forms for self-monitoring reports.

(3) Facilities having a design capacity of 50,000 gallons per day or more shall submit an annual report which shall include:

(a) A summary of the quantity and quality of waste influent and effluent for each month, for each parameter, with average, minimum and maximum values shown.

(b) A report of the number of times the facility bypassed; and

(c) A report of what percent of the time the minimum treatment conditions were not met.

JOHN S. HOFFMAN, Secretary

ADOPTED: March 13, 1975

RECEIVED BY LRC: March 14, 1975 at 3:38 p.m.

PUBLIC HEARING: To satisfy the requirements of KRS 13.085 and 224.033 (17), a hearing shall be held on this regulation on May 14, 1975, at 1:30 p.m. EDT in the Auditorium of Capital Plaza Tower, Frankfort, Kentucky. For additional information or to submit written comment, please contact Harold T. Snodgrass, Director, Division of Water Quality, Department for Natural Resources and Environmental Protection, 6th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601.

DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Water Quality
(401 KAR 5:015)

RELATES TO: KRS Chapter 224
PURSUANT TO: KRS 13.082, 224.033(17)
SUPERSEDES: WP-3

NECESSITY AND FUNCTION: This regulation requires that spills and bypasses from waste treatment facilities be reported to the department. Such reports enable the department to determine what action it need initiate to protect public safety and mitigate or reduce the effect of such spill or bypass.

Section 1. Any person having knowledge in advance of the necessity to bypass a sewage system shall notify the Division of Water before such bypass is commenced. Notification shall be given as far in advance as possible.

Section 2. Whenever by reason of emergency or accident a spill or discharge occurs from a sewage system or from a container or pipeline used to transport or store substances, the person responsible for such activity shall immediately notify the Division of Water by the most rapid means available.

Section 3. Any person notifying the department pursuant to Sections 1 or 2, shall report the point of discharge, the nature of the material discharged, the quantity of the material discharged and an assesment of probable environmental impact.

Section 4. Notification may be made by any mode of communication. Notification required by Section 2 shall be made by the most rapid means of communication available. If notification is not initially made in writing, it shall be confirmed by written notification within ten (10) days.

Section 5. Persons failing to report as required in Sections 1, 2 and 3 are subject to the penalties provided by KRS 224.994.

JOHN STANLEY HOFFMAN, Secretary
ADOPTED: March 13, 1975
RECEIVED BY LRC: March 14, 1975 at 3:43 p.m.

PUBLIC HEARING: To satisfy the requirements of KRS 13.085 and 224.033(17), a hearing shall be held on this regulation on May 13, 1975, at 9 a.m. EDT in the Auditorium of Capital Plaza Tower, Frankfort, Kentucky. For additional information or to submit written comment, please contact Harold T. Snodgrass, Director, Division of Water Quality, Department for Natural Resources and Environmental Protection, 6th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601.

DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Water Quality
(401 KAR 5:025)

RELATES TO: KRS Chapter 224
PURSUANT TO: KRS 13.082, 224.033(17)
SUPERSEDES: WP-4-1
NECESSITY AND FUNCTION: This regulation is to implement KRS 224.020. The regulation provides narrative water quality standards for all waters and sets forth a use classifiction scheme with numeric criteria for applicable waters.

Section 1. Prohibitions. No person or group of persons as defined in KRS Chapter 224 shall cause to be violated any one (1) of the minimum standards in Section 2 or any one (1) of the standards established in Sections 3 through 9 of this regulation.

Section 2. The following are minimum conditions applicable to all waters of the Commonwealth of Kentucky. All waters of the Commonwealth shall be:

(1) Substantially free from substances attributable to municipal, industrial or other discharges or agricultural practices that will settle to form putrescent sludge deposits;

(2) Free from floating debris, oil, scum and other floating materials attributable to municipal, industrial or other discharges or agricultural practices in amounts sufficient to be unsightly or deleterious;

(3) Free from materials attributable to municipal, industrial or other discharges or agricultural practices producing color, odor or other conditions in such degree as to create a nuisance; and

(4) Free from substances attributable to municipal, industrial or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to human, animal, plant or aquatic life.

(5) In the standards established by subsections (1) through (4), every person as defined in KRS Chapter 224 shall remove from their discharges those substances described in subsections (1) through (4) to the lowest practicable level attainable under current technology.

Section 3. Stream use classification. In addition to the minimum conditions set forth in Section 2, the use classification found in Sections 4 through 9 shall govern where applicable.

Section 4. Public water supply and food processing industries. The following criteria are applicable to surface water at the point at which water is withdrawn for use for a public water supply or by a food processing industry:

(1) Bacteria: Coliform group shall not exceed 5,000 per 100 ml as a monthly arithmetical average value as determined by either MPN or MF count nor exceed this number in more than twenty (20) percent of the samples examined during any month; nor exceed 20,000 per 100 ml in more than five (5) percent of such samples.

(2) Threshold-odor number after normal treatment shall not be less than three (3).

(3) Dissolved solids shall not exceed 500 mg/l as a monthly average value, nor exceed 750 mg/l at any time. Values of specific conductance of 800 and 1,200 micromhos/ca, at 25 degrees Centigrade, may be considered equivalent to dissolved solids concentrations of 500 and 750 mg/l.

(4) Radioactive substances: Gross beta activity shall not exceed 1,000 picocuries per liter, pCi/l, nor shall activity from dissolved Strontium 90 exceed 10 pCi/l, nor shall activity from dissolved alpha emitters exceed 3 pCi/l.

(5) Chemical constituents shall not exceed the following specified concentrations at any time:

Constituents	Concentrations, mg/l
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium (Hexavalent)	0.05
Cyanide	0.025
Fluoride	1.0
Lead	0.05
Selenium	0.01
Silver	0.05

Section 5. Industrial water supply. The following criteria are applicable to water at the point at which water is withdrawn for use, either with or without treatment, for industrial cooling and processing, other than food processing, and shall be applicable only within a mixing zone:

(1) pH shall not be less than 5.0 nor greater than 9.0 at any time.

(2) Temperature shall not exceed 95 degrees Fahrenehit at any time.

(3) Dissolved Solids shall not exceed 750 mg/l as a monthly average value, nor exceed 1,000 mg/l at any time. Values of specific conductance of 1,200 and 1,600 micromhos/ca, at 25 degrees Centigrade, may be considered equivalent to dissolved solids concentrations of 750 and 1,000 mg/l.

Section 6. Aquatic life. The following criteria are for evaluation of conditions for the maintenance of well balanced, indigenous fish population. The aquatic use standards shall not apply to areas immediately adjacent to outfalls. Areas immediately adjacent to outfalls shall be as small as possible, be provided for mixing only, and shall not prevent the free passage of fish and drift organisms.

(1) Dissolved oxygen. Concentrations shall aver-

age at least 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or any place outside the mixing zone.

(2) pH values shall not be less than 6.0 nor more than 9.0.

(3) Temperature shall not exceed 89 degrees Fahrenheit.

- (a) There shall be no abnormal temperature changes that may effect aquatic life unless caused by natural conditions.
- (b) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.
- (c) The maximum temperature rise at any time or place above natural temperature shall not exceed 5 degrees Fahrenheit in streams. In addition, the water temperature for all streams shall not exceed the maximum limits indicated in the following table:

Stream maximum temperature for each month in °F.

January	50
February	50
March	60
April	70
May	80
June	87
July	89
August	89
September	87
October	78
November	70
December	57

- (d) The allowable temperature increase in public water impoundments shall be limited to 3 degrees Fahrenheit in the epilimnion if thermal stratification exists. Public water impoundments include all impounded water of the Commonwealth which are open to the public and used by the public.

(4) Toxic substances shall not exceed one-tenth of the 96-hour median tolerance limit of fish. Where there are substances that are toxic because of their cumulative characteristics, other limiting concentrations may be used in specific cases as presently approved by the Federal Environmental Protection Agency, or as later adopted by the Division of Water Quality.

Section 7. Put-and-take trout streams: The following criterial are applicable to those waters designated by the division as put-and-take trout streams:

(1) Dissolved oxygen concentrations shall not be less than 6.0 mg/l at any time or any place. Spawning areas, during the spawning season, shall be protected by a minimum DO concentration of 7.0 mg/l.

(2) Temperature: Stream temperature shall not be increased artificially above the natural temperature at any time in cold water trout streams.

Section 8. Recreation: Unless caused by natural conditions, the following criterion shall apply in waters to be used for recreational purposes, including but not limited to such water-contact activities as swimming and water skiing. Bacteria: The total coliform level shall not exceed an average 1,000 per 100 ml. Total coliform shall not exceed this number in twenty (20) percent of the samples in a month, nor exceed 2400/100 ml on any day. If the level of total coliform is exceeded, then a fecal coliform standard shall be used. There shall be a reduction of fecal coliform to such degree that during the months of May through October fecal coliform density in the discharge does not exceed 200 per 100 ml as a monthly geometric mean, based on not less than ten (10) samples per month, nor exceed 400 per 100 ml in more than ten (10) percent of the samples examined during a month, and during the months of November through April, the density does not exceed 1,000 per 100 ml as a monthly geometric mean, based on not less than ten (10) samples per month, nor exceed 2,000 per 100 ml in more than ten (10) percent of the samples examined during a month.

Section 9. Agricultural: No criteria in addition to the minimum conditions enumerated in Section 2 are proposed for the evaluation of stream quality at the point at which water is withdrawn for agricultural and stock watering use.

Section 10. Multiple uses. One or more uses established in Sections 4 through 9 may apply to the same waters. The use criteria shall apply to those waters suitable for use or uses provided in Section 3. In the event there is a conflict between or among the applicable uses, the more stringent use criteria shall apply.

JOHN STANLEY HOFFMAN, Secretary
ADOPTED: March 13, 1975.
RECEIVED BY LRC: March 14, 1975 at 3:39 p.m.

PUBLIC HEARING: To satisfy the requirements of KRS 13.085 and 224.033(17), a hearing shall be held on this regulation on May 14, 1975 at 9 a.m. EDT in the Auditorium of Capital Plaza Tower, Frankfort, Kentucky. For additional information or to submit written comment, please contact Harold T. Snodgrass, Director, Division of Water Quality, Department for Natural Resources and Environmental Protection, 6th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601.

DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

Bureau of Environmental Quality
Division of Water Quality
(401 KAR 5:035)

RELATES TO: KRS 224.020, 224.060
PURSUANT TO: KRS 13.082, 224.033(17)
SUPERSEDES: WP-6-2

NECESSITY AND FUNCTION: To implement KRS 224.020. This regulation applies to the use classification found in Sections 3 through 9 of 401 KAR 5:025 to certain waters. Additionally, this regulation mandates that all persons discharging pollutants through point sources shall apply "best practical control technology" and "best available technology economically achievable" by certain dates.

Section 1. (1) Except as otherwise provided by law, all waters shown on the map "Streams of Kentucky" prepared by the Kentucky Department of Commerce, Frankfort, Kentucky, 1973, hereby incorporated by reference, scale 1 inch equals 10 miles and all streams not on the map which have not been excepted under Subsection 2 below are classified for all uses in accordance with Sections 3 through 9 of 401 KAR 5:025.

(2) The Secretary of the Department of Natural Resources and Environmental Protection or his designee may revise or reclassify a stream or stream segment if it can be adequately demonstrated that the maintenance of the "all use" water quality cannot be met because of (1) technological limitations or (2) naturally poor water quality. Such change in classification must be made on a case-by-case basis and may utilize the wasteload allocation models or other considerations developed in conjunction with the Commonwealth's Continuous Planning Process in such determinations. Where such exceptions are made specific water quality criteria will be appropriately amended.

All such revisions will be temporary and subject to administrative review at least every three years from the date of such initial classification.

Section 2. (1) All persons who discharge through point sources, including but not limited to any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged, shall satisfy the requirements of this section.

(2) All persons who discharge through a point source shall apply the best practicable control technology considering such factors as the total cost of the application of such technology in relation to the effluent reduction benefits to be achieved from such application, the age of the equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact and such other factors as the department considers appropriate to treatment facilities not later than July 1, 1977.

(3) All persons who discharge through a point source shall apply the best available technology economically achievable by July 1, 1983. In determining what is the best available technology economically achievable, the factors in subsection (2) of this section, shall be considered, and in addition, any control measures and practices available to eliminate the discharge of pollutants, taking into account the cost of eliminating the discharge of pollutants.

(4) Where coliform bacteria are present in a discharge, disinfection shall be required in accord with Section 8 of 401 KAR 5:025.

Section 3. All existing facilities shall satisfy applicable sections of this regulation or be committed to a compliance schedule which will achieve the same results. New facilities shall satisfy Sections 1 and 2 upon commencing operations.

Section 4. (1) All permits on existing facilities shall be reviewed to insure that they shall satisfy the requirements of Sections 1, 2 and 3. When the permit for an existing facility is reviewed, the person(s) responsible shall be notified to submit an application for a permit anew with such supporting information as may be required by the department.

(2) Upon notice of review, persons failing to submit a complete application within sixty (60) days shall be in violation of this regulation unless an extension is granted by the department.

Section 5. The department shall refuse to issue a permit to any applicant where the discharge in the judgment of the department does not conform to the policy of the Commonwealth of Kentucky as set forth in KRS 224.020.

Section 6. Streams of the Commonwealth, as defined in Section 1, 401 KAR 5:035, that possess a higher quality than that required by these water quality standards shall be maintained at that higher level. The Secretary of the Department for Natural Resources and Environmental Protection or his designee will determine the need, and set the requirements for, this restriction as warrented on a case by case basis. In all cases, such higher quality shall not be degraded unless and until it is determined by the Secretary or his designee that such a change is mandated by necessary economic or social developments, and that such change will not adversely effect present or future uses. The highest statutory and regulatory requirements shall be achieved for all new and existing point sources. In implementing this policy as it relates to interstate streams, the Environmental Protection Agency Administrator will be kept advised and provided with such information as is required to discharge his responsibilities under the Federal Water Pollution Control Act as amended.

JOHN STANLEY HOFFMAN, Secretary
ADOPTED: March 13, 1975
RECEIVED BY LRC: March 14, 1975 at 3:43 p.m.

PUBLIC HEARING: To satisfy the requirements of KRS 13.085 and 224.033(17), a hearing shall be held on this regulation on May 13, 1975, at 1:30 p.m. EDT in the Auditorium of Capital Plaza Tower, Frankfort, Kentucky. For additional information or to submit written comment, please contact Harold T. Snodgrass, Director, Division of Water Quality, Department for Natural Resources and Environmental Protection, 6th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601.

DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
Bureau of Environmental Quality
Division of Water Quality
(401 KAR 5:045)

RELATES TO: KRS Chapter 224
PURSUANT TO: KRS 13.082, 224.033(17)
NECESSITY AND FUNCTION: This regulation is necessary to implement KRS 224.020. It requires a minimum of secondary treatment for facilities which receive biodegradable wastes and treatment in excess of "secondary" in certain situations. The regulation requires that existing facilities receiving such wastes reapply to the department prior to January 1, 1976 for a permit to continue operating.

Section 1. Definitions. The definitions found in Section 1 of 401 KAR 5:005 shall apply to this regulation.

Section 2. All persons who discharge into waters of the Commonwealth through facilities which receive an influent which is biochemically degradable, shall provide a minimum of secondary treatment to that influent prior to its discharge. If other constituents are present, additional treatment may be required.

Section 3. "Secondary treatment" is that level of effluent quality attainable in terms of the parameters; biochemical oxygen demand, BOD, suspended solids, fecal coliform bacteria and pH.

(1) Biochemical oxygen demand, five (5) days.
- (a) The arithmetic mean of the values for BOD effluent samples collected during a period of thirty (30) consecutive days shall not exceed thirty (30) milligrams per liter.
- (b) The arithmetic mean of the values for BOD in effluent samples collected during a period of seven (7) consecutive days shall not exceed forty-five (45) milligrams per liter.
- (c) The arithmetic mean of values for BOD in effluent samples collected during a period of thirty (30) consecutive days shall not exceed fifteen (15) percent of the arithmetic means of the values for influent samples collected at approximately the same times during the same period.

(2) Suspended Solids.
- (a) The arithmetic means of the values for suspended solids in effluent samples collected during a period of thirty (30) consecutive days shall not exceed thirty (30) milligrams per liter.
- (b) The arithmetic means of the values for suspended solids in effluent samples collected during a period of seven (7) consecutive days shall not exceed forty-five (45) milligrams per liter.
- (c) The arithmetic means of the values for suspended solids in effluent samples collected during a period of thirty (30) consecutive days shall not exceed fifteen (15) percent of the arithmetic means of the values for influent samples collected at approximately the same time during the same period.

(3) Fecal coliform bacteria.
- (a) The geometric mean of the value for fecal coliform in effluent samples collected during a period of thirty (30) consecutive days shall not exceed 200 per 100 milliliters.
- (b) The geometric means of the values for fecal coliform in effluent samples collected during a period of seven (7) consecutive days shall not exceed 400 per 100 milliliters.

(4) pH. The effluent values for pH shall not be less than a pH of 6.0 nor greater than 9.0.

Section 4. Treatment in excess of "secondary treatment" for influents which are biochemically degradable shall be required for a continuous facility discharge where:

(1) The department determines that the receiving waters will not satisfy applicable water quality standards as a result of a facility discharge.

(2) The department determines that a facility lacks the sophistication of process to consistently produce the required effluent quality.

(3) The department determines that the receiving waters will exceed four (4) milligrams per liter of ammonia nitrogen as a result of the facility's discharge.

Section 5. (1) Any person responsible for an existing facility which receives biochemically degradable influent, shall, prior to January 1, 1976, make application to the department for a permit to continue to discharge to the waters of the Commonwealth.

(2) If the division determines, from available information or information requested from the applicant, that an existing facility does or may not produce an effluent equal to that specified in Sections 3 and 4, it shall require the applicant to submit plans and specifications or other data showing how the facility shall be brought into compliance.

(3) If the facility's effluent is equal to that required in Sections 3 and 4, an operating permit shall be issued to the applicant.

(4) If the facility's effluent does not satisfy the requirements of Sections 3 and 4, the department may issue the applicant a permit to upgrade the facility.
- (a) No such permit shall be issued unless the department has received and approved a compliance schedule to bring a facility into compliance at the earliest possible date.
- (b) A compliance schedule shall contain a commitment from the applicant to achieve increments of progress to be completed on dates certain.
- (c) At a minimum the increments shall include a date for submitting any additional plans and specifications required for construction; and a date for completion of construction.
- (d) Upon request from the department, the applicant shall provide the department with periodic reports regarding progress towards compliance schedule increments.

(5) Failure to meet the dates set forth in a compliance schedule shall constitute a violation of KRS 224.060.

JOHN S. HOFFMAN, Secretary

ADOPTED: March 13, 1975
RECEIVED BY LRC: March 14, 1975 at 3:44 p.m.

PUBLIC HEARING: To satisfy the requirements of KRS 13.085 and 224.033(17), a hearing shall be held on this regulation on May 13, 1975, at 10:30 a.m. EDT in the Auditorium of Capital Plaza Tower, Frankfort, Kentucky. For additional information or to submit written comment, please contact Harold T. Snodgrass, Director, Division of Water Quality, Department for Natural Resources and Environmental Protection, 6th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601.

WATER QUALITY MANAGEMENT STATUS

INTRODUCTION

This chapter presents the water quality management status in the Ohio River Basin Planning area. The purpose of this chapter is to identify and locate all existing point and nonpoint waste sources within the basin, determine the waste load characteristics of these sources, and then determine the effects of the waste loads discharged by these point and nonpoint sources on the receiving streams. The entire planning area is divided into one hundred seventy three subareas, called segments, based on drainage characteristics, point and nonpoint source discharges and possible future development. These segments form the basic planning unit for water quality management in the river basin. Each segment is either classified as Effluent Limited or Water Quality Limited, depending on severity of pollution within the segment. Also contained in this chapter are the wastewater control needs and the disposal of treatment plant residuals within the basin.

SEGMENT CLASSIFICATION

The Ohio River Basin is divided into discrete segments based primarily on physical characteristics and point and nonpoint source discharges. Exhibit 4.1t lists all segments in the study area, together with their location, 1975 classification and priority ranking, and any deviations from national priority ranking.

The segmentation presented in Exhibit 4.1t is primarily based on the segmentation reported in the State of Kentucky Continuing Plan (FY 1974). The State of Kentucky segmentation is reviewed and changed in some cases. Where an area needed to be further subdivided for better understanding of the effects of point and nonpoint source discharges the original State of Kentucky segment is modified and replaced with new segments. In a number of cases new segments are created where no discharges presently exist. This is done in anticipation of accomodating possible future point or nonpoint source discharges in the area and is in accordance with the instructions of the State Division of Water (Quality).

The major factors considered when reviewing the State of Kentucky stream segments are:

1. Stream Slope
2. Waste Loads
3. Tributaries
4. Stream Flow
5. Impoundments

Each segment is ranked, based on a uniform priority system used throughout the state. The priority ranking system takes into account the segments' relationship to adjacent segments along with internal segment conditions effecting water quality.

Exhibit 4.2m shows all the segments in the ORB together with their 1975 classification. Basic planning data such as population, housing, and land use for each segment are presented in Exhibit B1.2t in Appendix B. Significant municipal, domestic, industrial and nonpoint sources in each segment are illustrated in Exhibits B-1.1m through B-13.1m.

Method of WQL/EL Classification

Each segment in the basin is classified as either a Water Quality Limited Segment (WQL) or an Effluent Limited Segment (EL) based on the definitions in 40 CFR Section 130.11 as reproduced below:

1. WQL Segments

Any segment where it is known that water quality does not meet applicable water quality standards and/or is not expected to meet applicable water quality standards even after the application of the effluent limitations required by Sections 301b(1)A and 301b(1)B of the Act.

2. EL Segments

Any segment where it is know that water quality is meeting, will continue to meet applicable water quality standards, or where there is adequate demonstration that water quality will meet applicable water quality standards after the application of the effluent limitations required by Sections 301b(1)A and 301b(1)B of the Act.

The segment classifications presented in Exhibit 4.1t are based on results of water quality modeling of the streams and rivers within the Ohio River Basin Planning Area. Modeling the oxygen resources of Kentucky streams under conditions of secondary treatment forms the basis for assigning these classifications.

If, under these conditions, a water quality violation (dissolved oxygen less than 5 mg/L or ammonia nitrogen greater than 4 mg/L) occurs along the main stem of the segment, that segment is classified as WQL. In some cases, minor violations occur in small streams tributary to the segment's main stem. These violations usually occur as a result of a small discharge or group of discharges on a zero flow stream. Although remedial action is recommended to illuminate the water quality problems in the tributaries, the entire segment is not classified as WQL. It is also important to realize that water quality violations in the main stem of a segment can be caused by discharges off the main stem whose critical oxygen demand doesn't occur until the wastewater reaches the main stem.

In situations where nonpoint sources such as acid mine drainage or urban runoff are considered serious the segments in which they occur are classified as WQL.

EXHIBIT 4.1t SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
06001	Little Sandy River and its tributaries from confluence with Ohio to East Fork	EL	26	No
06002	Little Sandy River and its tributaries from East Fork to Wilson Ck.	EL	3	No
06003	Sinking Br. and its tributaries from confluence with Little Sandy River to headwater	EL	1	No
06004	East Fork and its tributaries from confluence with Little Sandy River to headwater	WQL	88	No
06005	Everman Creek and its tributaries from confluence with Little Sandy River to headwater	EL	1	No
06006	Barrett Creek and its tributaries from confluence with Little Sandy River to headwater	EL	2	No
06007	Little Sandy River and its tributaries from Wilson Creek to Little Fork	WQL	204	No
06008	Wilson Creek and its tributaries from confluence with Little Sandy River to headwater	EL	1	No
06009	Little Sinking Creek and its tributaries from confluence with Little Sandy River to headwater	EL	1	No
06010	Big Sinking Creek and its tributaries from confluence with Little Sandy River to headwater	WQL	2	No
06011	Little Sandy River and its tributaries from Little Fork to Big Sinking Creek	WQL	100	No
06012	Little Fork and its tributaries from confluence with Little Sandy to headwater	WQL	106	No
06013	Little Sandy River and its tributaries from Big Sinking Creek to headwater	WQL	109	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08001	Humphrey Creek and its tributaries from confluence with Ohio River to mile point 10.9	WQL	85	No
08002	Humphrey Creek and its tributaries from mile point 10.9 to headwater	WQL	21	No
08003	Unnamed tributary from confluence with Ohio to headwater	EL	1	No
08004	Newton Creek and its tributaries from confluence with Ohio to headwater	EL	2	No
08005	Bayou Creek and its tributaries from confluence with Ohio to headwater	EL	3	No
08006	Little Bayou Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08906	Unnamed tributary from confluence with Ohio to headwater	EL	2	No
08007	Massac Creek and its tributaries from confluence with Ohio to headwater	EL	11	No
08008	Perkins Creek and its tributaries from confluence with Ohio to headwater	EL	128	No
08009	Bayou Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08010	Buck Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08011	Deer Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08012	Hurricane Creek and its tributaries from confluence with Ohio to headwater	WQL	2	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08013	Crooked Creek and its tributaries from confluence with Ohio to headwater	EL	25	No
08014	Camp Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08015	Goose Pond Ditch and its tributaries from confluence with Ohio to headwater	WQL	10	No
08915	Unnamed tributary from confluence with Ohio to headwater	EL	1	No
08016	Eagle Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08017	Sibley Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08018	Lost Creek and its tributaries from confluence with Ohio to headwater	WQL	205	No
08019	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08020	Hogan Slough and its tributaries from confluence with Ohio to headwater	EL	0	No
08021	Highland Creek and its tributaries from confluence with Ohio to headwater	WQL	1052	No
08022	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08023	Canoe Creek and its tributaries from confluence with Ohio to headwater	WQL	8	No
08024	Fulkerson Ditch and its tributaries from confluence with Ohio to headwater	EL	0	No
08025	Yellow Creek and its tributaries from confluence with Ohio to headwater	WQL	28	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08026	Pup Creek and its tributaries from confluence with Ohio to headwater	WQL	106	No
08027	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08028	Blackford Creek and its tributaries from confluence with Ohio to headwater	WQL	103	No
08928	Unnamed tributary from confluence with Ohio to headwater	WQL	2	No
08029	Yellow Creek and its tributaries from confluence with Ohio to headwater	WQL	1876	No
08030	Lead Creek and its tributaries from confluence with Ohio to headwater	WQL	8	No
08031	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08032	Clover Creek and its tributaries from confluence with Ohio to headwater	EL	2	No
08033	Bull Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08034	Town Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08035	Sinking Creek and its tributaries from confluence with Ohio to headwater	WQL	161	No
08036	Lick Run and its tributaries from confluence with Ohio to headwater	EL	0	No
08037	Yellowbank Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08038	Spring Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08039	Sinkholes tributary to Wolf Creek	EL	0	No
08040	Watson Run and its tributaries from confluence with Ohio to headwater	EL	0	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08041	Wolf Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08042	Sinkholes tributary to Wolf Creek	EL	6	No
08043	Doe Run and its tributaries from confluence with Ohio to headwater	EL	16	No
08044	Otter Creek and its tributaries from confluence with Ohio to headwater	WQL	42	No
08045	Mill Creek & Mill Creek Cutoff and their tributaries from confluence with Ohio to headwater	WQL	500	No
08046	Paddy Run and its tributaries from confluence with Ohio to headwater	WQL	100	No
08047	Beargrass Creek and its tributaries from confluence with Ohio to headwater	WQL	308	No
08048	Unnamed tributary from confluence with Ohio to headwater	WQL	47	No
08049	Goose Creek and its tributaries from confluence with Ohio to headwater	WQL	815	No
08050	Harrods Creek and its tributaries from confluence with Ohio to South Fork	WQL	231	No
08051	Harrods Creek and its tributaries from South Fork to Highway 3	EL	9	No
08052	Harrods Creek and its tributaries from Highway 3 to headwater	WQL	432	No
08053	Eighteen Mile Creek and its tributaries from confluence with Ohio to headwater	EL	2	No
08054	Pattons Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08055	Middle Creek and its tributaries from confluence with Ohio to headwater	EL	0	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08056	Bare Bone Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08057	Unnamed tributary from confluence with Ohio to headwater	EL	1	No
08058	Spring Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08059	Camp Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08060	Locust Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08061	McCools Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08062	Stephens Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08063	Craig Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08064	Vera Crug Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08065	Dry Creek and its tributaries from confluence with Ohio to headwater	EL	2	No
08066	Little Sugar Creek and its tributaries from confluence with Ohio to headwater	WQL	1	No
08067	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08068	Big Bone Creek and its tributaries from confluence with Ohio to headwater	WQL	31	No
08069	Unnamed tributary from confluence with Ohio to	EL	0	No
08070	Unnamed tributary from confluence with Ohio to headwater	EL	1	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08071	Gunpowder Creek and its tributaries from confluence with Ohio to headwater	WQL	640	No
08072	Unnamed tributary from confluence with Ohio to headwater	EL	1	No
08073	Woolper Creek and its tributaries from confluence with Ohio to headwater	EL	29	No
08074	Garrison Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08075	Sand Run and its tributaries from confluence with Ohio to headwater	EL	0	No
08076	Elijah Creek and its tributaries from confluence with Ohio to headwater	EL	26	No
08077	Dry Creek and its tributaries from confluence with Ohio to headwater	EL	11	No
08977	Sleepy Hollow Creek and its tributaries from confluence with Ohio to headwater	EL	50	No
08078	Four Mile Creek and its tributaries from confluence with Ohio to headwater	EL	31	No
08079	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08080	Twelve Mile Creek and its tributaries from confluence with Ohio to headwater	WQL	67	No
08081	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08082	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08083	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08084	Snag Creek and its tribubutaries from confluence with Ohio to headwater	EL	0	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08085	Locust Creek and its tributaries from confluence with Ohio to headwater	WQL	26	No
08086	Unnamed tributary from confluence with Ohio to headwater	EL	0	No
08087	Bracken Creek and its tributaries from confluence with Ohio to headwater	WQL	4	No
08088	Lee Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08089	Lawrence Creek and its tributaries from confluence with Ohio to headwater	EL	115	No
08090	Limestone Creek and its tributaries from confluence with Ohio to headwater	WQL	177	No
08091	Cabin Creek and its tributaries from confluence with Ohio to headwater	EL	3	No
08092	Crooked Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08093	Quick Run and its tributaries from confluence with Ohio to headwater	EL	1	No
08094	Salt Lick Creek and its tributaries from confluence with Ohio to headwater	EL	1	No
08095	Kinniconick Creek and its tributaries from confluence with Ohio to headwater	WQL	6	No
08096	Brierry Br. and its tributaries from confluence with Ohio to headwater	EL	0	No
08097	Vance Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08098	Rock Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08099	Newberry Br. and its tributaries from confluence with Ohio to headwater	EL	0	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08100	Grays Br. and its tributaries from confluence with Ohio to headwater	WQL	1	No
08101	Smith Br. and its tributaries from confluence with Ohio to headwater	EL	0	No
08102	Coal Br. and its tributaries from confluence with Ohio to headwater	EL	0	No
08103	Uhlens Run and its tributaries from confluence with Ohio to headwater	WQL	25	No
08104	Unnamed tributary from confluence with Ohio to headwater	EL	349	No
08105	White Oak Creek and its tributaries from confluence with Ohio to headwater	WQL	9	No
08106	Hood Creek and its tributaries from confluence with Ohio to headwater	EL	12	No
08107	Keys Creek and its tributaries from confluence with Ohio to headwater	EL	0	No
08108	Catletts Creek and its tributaries from confluence with Ohio to headwater	WQL	2	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
10001	Tradewater River and its tributaries from confluence with Ohio to MP 7.2	EL	0	No
10002	Cypress Creek and its tributaries from confluence with Tradewater to headwater	WQL	42	No
10003	Tradewater River and its tributaries from MP 7.2 to MP 16.63	WQL	102	No
10004	Vaughn Ditch and its tributaries from confluence with Tradewater to headwater	WQL	476	No
10005	Tradewater River and its tributaries from MP 16.63 to MP 41.75	WQL	102	No
10006	Owens Creek and its tributaries from confluence with Tradewater to headwater	WQL	72	No
10007	Tradewater River and its tributaries from MP 41.75 to MP 47.05	WQL	100	No
10008	Clear Creek and its tributaries from confluence with Tradewater to Richland Creek	WQL	113	No
10009	Clear Creek and its tributaries from Richland Creek to headwater	WQL	152	No
10010	Tradewater River and its tributaries from MP 47.05 to MP 81.2	WQL	103	No
10011	Flynn Fork and its tributaries from confluence with Tradewater to headwater	WQL	6	No
10012	Tradewater River and its tributaries from MP 81.2 to Piney Creek	WQL	203	No
10013	Piney Creek and its tributaries from confluence with Tradewater to headwater	EL	1	No
10014	Tradewater River and its tributaries from Piney Creek to headwater	WQL	105	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

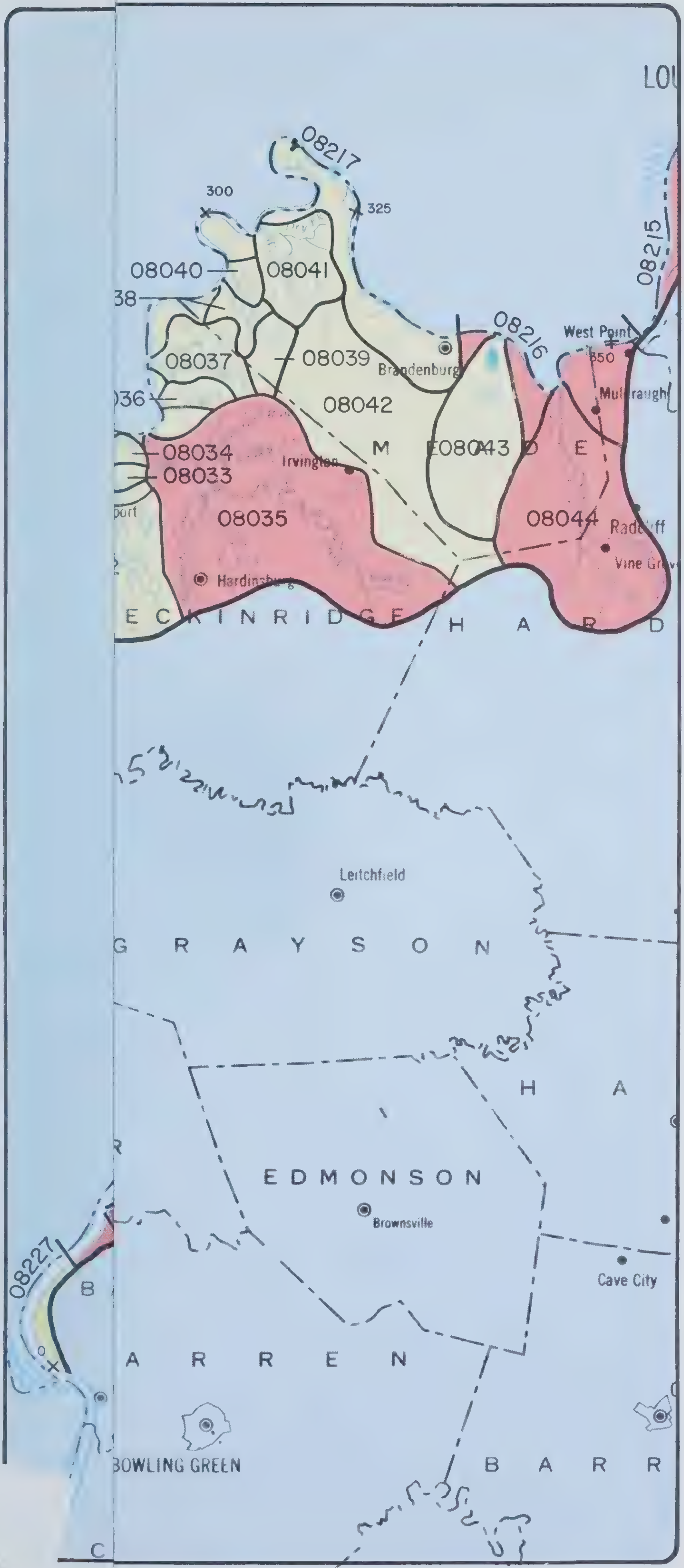
Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
11001	Tygarts Creek and its tributaries from confluence with Ohio to Little White Oak Creek	EL	6	No
11002	White Oak Creek and its tributaries from confluence with Tygarts to headwater	EL	1	No
11003	Little White Oak Creek and its tributaries from confluence with Tygarts to headwater	WQL	1	No
11004	Tygarts Creek and its tributaries from Little White Oak Creek to Buffalo Creek	EL	3	No
11005	Buffalo Creek and its tributaries from confluence with Tygarts to headwater	EL	2	No
11006	Tygarts Creek and its tributaries from Buffalo Creek to headwater	WQL	65	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08200	Ohio Main Stem from MP317.0 to MP321.8	WQL	4458	No
08201	Ohio Main Stem from MP321.8 to MP327.2	WQL	28384	No
08202	Ohio Main Stem from MP327.2 to MP332.0	WQL	291	No
08203	Ohio Main Stem from MP332.0 to MP341.0	WQL	10321	No
08204	Ohio Main Stem from MP341.0 to MP356.5	WQL	1	No
08205	Ohio Main Stem from MP356.5 to MP411.8	WQL	104	No
08206	Ohio Main Stem from MP411.8 to MP436.2	WQL	10	No
08207	Ohio Main Stem from MP436.2 to MP463.5	EL	8	No
08208	Ohio Main Stem from MP463.5 to MP472.6	WQL	100	No
08209	Ohio Main Stem from MP472.6 to MP491.1	WQL	270	No
08210	Ohio Main Stem from MP491.1 to MP531.2	WQL	2	No
08211	Ohio Main Stem from MP531.2 to MP545.8	WQL	6910	No
08212	Ohio Main Stem from MP545.8 to MP590.5	EL	97	No
08213	Ohio Main Stem from MP590.5 to MP606.8	WQL	4546	No
08214	Ohio Main Stem from MP606.8 to MP615.0	WQL	13655	No

EXHIBIT 4.1t (Continued) SEGMENT DESCRIPTION AND WATER QUALITY STATUS

Segment	Location	1975 Segment Classification	1975 Segment Priority	Deviation from National Priorities
08215	Ohio Main Stem from MP615.0 to MP629.9	WQL	12930	No
08216	Ohio Main Stem from MP629.9 to MP645.8	WQL	139317	No
08217	Ohio Main Stem from MP645.8 to MP720.7	EL	6791	No
08218	Ohio Main Stem from MP720.7 to MP738.4	EL	5772	No
08219	Ohio Main Stem from MP738.4 to MP758.5	WQL	13394	No
08220	Ohio Main Stem from MP758.5 to MP776.1	WQL	155	No
08221	Ohio Main Stem from MP776.1 to MP806.0	WQL	840	No
08222	Ohio Main Stem from MP806.0 to MP846.0	WQL	125	No
08223	Ohio Main Stem from MP846.0 to MP873.5	EL	0	No
08224	Ohio Main Stem from MP873.5 to MP918.5	EL	1	No
08225	Ohio Main Stem from MP918.5 to MP934.5	EL	1	No
08226	Ohio Main Stem from MP934.5 to MP975.3	WQL	18530	No
08227	Ohio Main Stem from MP975.3 to MP979.0	EL	0	No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OHIO RIVER BASIN AND MINOR TRIBUTARIES

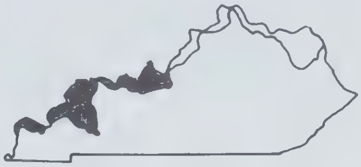

EXHIBIT 4.2m-1

SEGMENT CLASSIFICATION

LEGEND

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━━━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
────	SEGMENT BOUNDARIES

SEGMENT CLASSIFICATION

🟥	WATER QUALITY LIMITED SEGMENTS
🟨	EFFLUENT LIMITED SEGMENTS

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GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

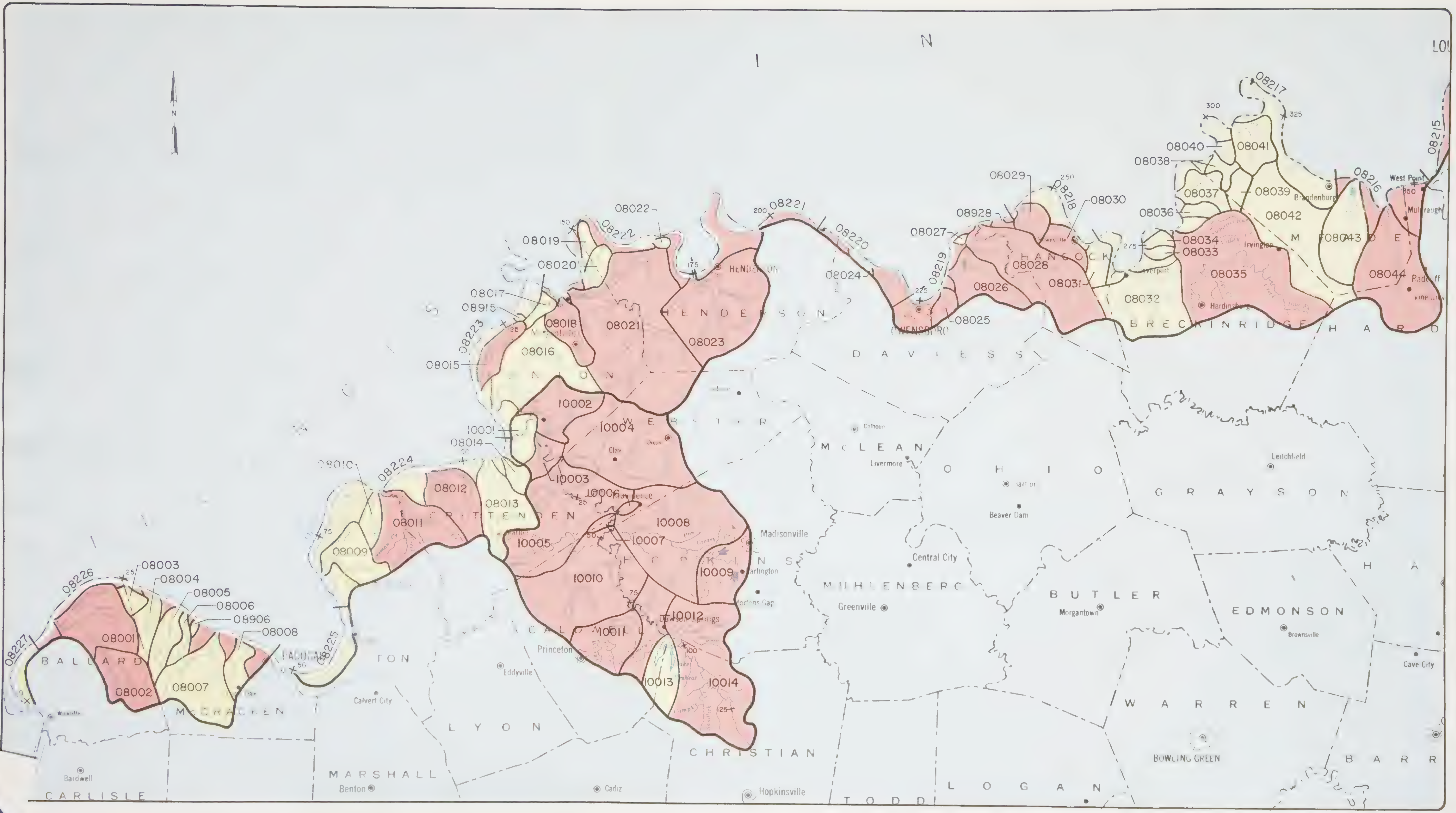
Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E

METCALF & EDDY, INC.

Boston New York Palo Alto Chicago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Dixon
Clay
Calhoun
McLEAN
Livermore
OHIO
Hartford
Beaver Dam
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Morgantown
EDMONSON
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Calvert City
LYON
WARREN
Cave City
Wickliffe
CHRISTIAN
BOWLING GREEN
BARR
Bardwell
CARLISLE
MARSHALL
Benton
Cadiz
Hopkinsville
TODD
LOGAN

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.2m-1

SEGMENT CLASSIFICATION

LEGEND

— · — ·	COUNTY OUTLINES
~~	STREAMS
———	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
——	SEGMENT BOUNDARIES

SEGMENT CLASSIFICATION

🟥	WATER QUALITY LIMITED SEGMENTS
🟨	EFFLUENT LIMITED SEGMENTS

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GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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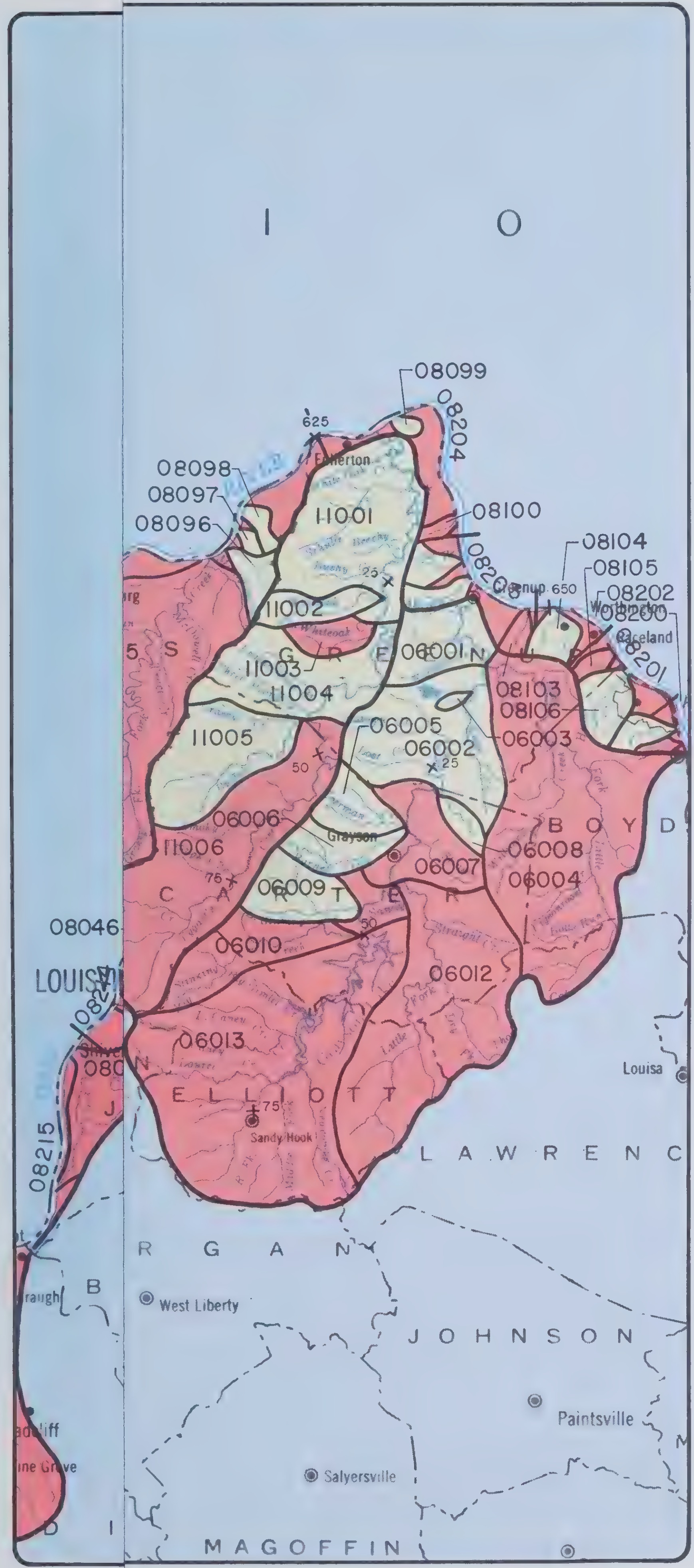
OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.2m-2

SEGMENT CLASSIFICATION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Sandy Hook
Louisa
LAWRENC
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C A R T E R
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R G A N
West Liberty
JOHNSON
Paintsville
Salyersville
MAGOFFIN

LEGEND

— · — · —	COUNTY OUTLINES
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+ 25	RIVER MILES
08088	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

SEGMENT CLASSIFICATION

🟥	WATER QUALITY LIMITED SEGMENTS
🟨	EFFLUENT LIMITED SEGMENTS

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GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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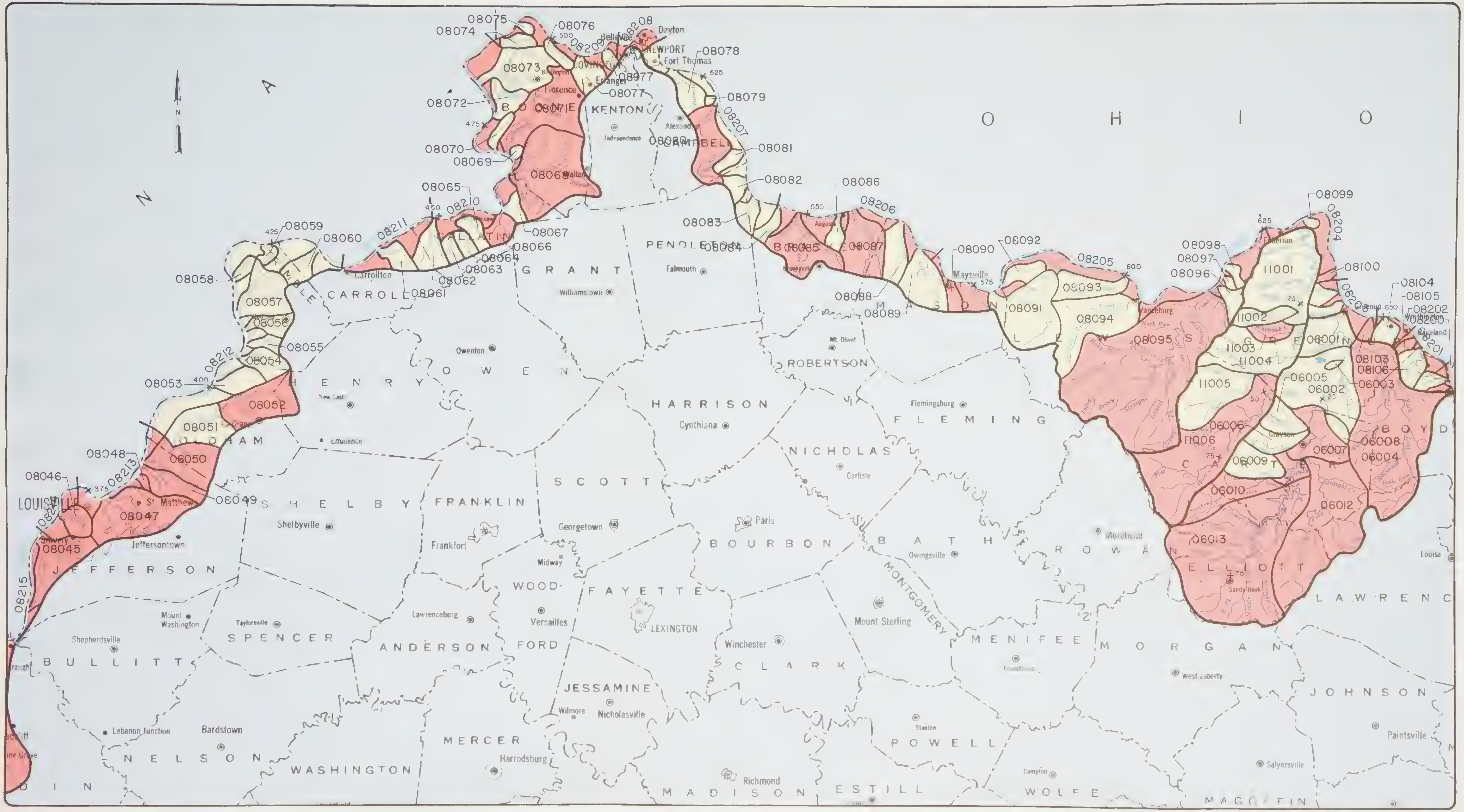
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Georgetown
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B A T H
Owingsville
Morehead
R O W A N
06013
J E F F E R S O N
Midway
E L L I O T T
Louisa
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Sandy Hook
L A W R E N C E
Mount Washington
Taylorsville
Lawrenceburg
Versailles
LEXINGTON
MONTGOMERY
Mount Sterling
Shepherdsville
S P E N C E R
A N D E R S O N
Winchester
M E N I F E E
M O R G A N
B U L L I T T
C L A R K
Frenchburg
West Liberty
J E S S A M I N E
J O H N S O N
Wilmore
Nicholasville
Lebanon Junction
Bardstown
Stanton
Paintsville
M E R C E R
Harrodsburg
P O W E L L
N E L S O N
W A S H I N G T O N
Richmond
Campton
Salyersville
M A D I S O N
E S T I L L
W O L F E
M A G O F F I N

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.2m-2

SEGMENT CLASSIFICATION

LEGEND

-·-·-	COUNTY OUTLINES
	STREAMS
▬	BASIN OUTLINE
+ 25	RIVER MILES
08088	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES

SEGMENT CLASSIFICATION

🟥	WATER QUALITY LIMITED SEGMENTS
▭	EFFLUENT LIMITED SEGMENTS

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC
Boston New York Palo Alto Chicago

Method for Formulation of Segment Priorities

The Division of Water (Quality) of the Department for Natural Resources and Environmental Protection has determined the method of formulation of segment priority.

The following is the procedure for assigning priority values to each stream segment in the State of Kentucky. The priority assigned to a segment is an important factor in allocating resources, conducting monitoring and special studies and in taking abatement actions. The priority ranking is required by 40 CFR 130.41 to reflect the following:

1. Severity of pollution problems.
2. Population affected.
3. Need to preserve high quality waters.
4. National priorities.
5. Factors identified by the state.

Objective

The primary objective of the procedure is to yield a systematic means of comparing segments in different locations on a common basis, to produce a priority list, and to guide management decisions. The process should be as objective and quantifiable as possible, and should be reproduceable on the basis of the data available. Since the segment priority is a key factor in allocating federal funds for abatement activities, it is important that the process be defensible and understandable to the general public.

Segment Priority Formula

$$\text{Priority} = \frac{P}{1000} + (BOD_5 + SS + NH_3 + PO_4 + \text{Metals}) + T + NP$$

The formula is explained a factor at a time as follows:

Factors

1. Population Affected = $\frac{P}{1000}$

People are affected by water pollution in at least two ways. (1) Pollution may reduce the economic, recreation and aesthetic values of the water to persons who might otherwise gain or benefit from clean water; (2) People will be required to pay, either directly or indirectly for pollution control. Therefore, it is reasonable to include the population in the segment, which responds to the federal regulations.

2. Severity of pollution = $(BOD_5 + SS + NH_3 + PO_4 + \text{Metals})$

The severity of pollution along with factors identified by the state are contained in a collection of terms which define allowable limits of waste strength which (BOD) result in the effect of the oxygen resources of the stream, (SS) the sedimentation load in the stream which can form a benthic demand, (NH_4 + PO_4) factors attributable to causing enrichment of the water, and (metals) finally toxic affects from the discharge of pollutants. The particular term is expressed in the equation as the difference between the most restrictive requirement and the amount discharged in pounds per day. To determine the most restrictive requirement three informational sources must be examined: (1) The definition of secondary waste treatment, which is basically 30 mg/L BOD and 30 mg/L of suspended solids supplemented by an ammonia nitrogen limitation of 4 mg/L in the receiving stream. (2) The NPDES permit which contains specific requirements for BOD and suspended solids and in some cases ammonia nitrogen. (3) The waste load allocation from the "Kentucky Waste Load Allocation Model" developed by U.K./U.L. The metals in the collection of terms are to apply to industries only and is computed as the difference between the wastewater characteristics and best practical treatment or NPDES limitations.

3. Special Impact - Thermal = T

In addition to the strength factors described under severity of pollution cooling water effects are included in the segment priority formulation using the ^{o}F above allowable times the flow in million gallons per day.

4. Special Impact - Nonpoint Sources = NP

The nonpoint source factor is a term which allows for 100 points where significant nonpoint sources occur. The term significant is to be applied using the following information for judgment.

a. Acid mine drainage will be considered significant when the stream is continuously impregnated with acid mine drainage to the extent that the pH is depressed below pH 6 at least 90% of the time or pH 5 at least 50% of the time.

b. Strip mining will be considered a significant impact if the present control techniques utilizing sedimentation basins is not sufficient to prevent a substantial increase in suspended solids in the main stem of the river.

c. Combined sewers will be considered significant when sufficient when the yearly average combined sewage overflow at least equals the treated effluent flow.

d. Surface run-off from urban areas will be considered significant when the population affected $\frac{P}{1000}$ is 10 or more.

A maximum of 100 points are allowed regardless of the number of judgment factors which might be answered in the affirmative.

Details of how each segment priority number is calculated are presented in Appendix B.

SIGNIFICANT MUNICIPAL DISCHARGES

In the Ohio River Basin there are forty-seven significant municipal discharges. Seventeen of these discharges are on the Ohio River and the rest are on minor tributaries. Exhibit 4.3t lists all significant municipal discharges along with the county and segment in which they are located, receiving streams including river mile for each of these discharges, and any water quality violations they may be causing in the segment. Also presented in Exhibit 4.3t are the NPDES permit number, the final expiration date

EXHIBIT 4.3t SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Grayson (STP)	Carter	06007	Little Sandy R. 645.0/37.70			KY 0020931	6/30/77	Yes
Greenup (STP)	Greenup	06001	Little Sandy R. 645.0/0.15			KY 0022918	6/30/77	Yes

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Alexandria (STP)	Campbell	08080	Four Mile Ck. 530.0/3.50/1.60					
Ashland (STP)	Boyd	08201	Ohio River 659.0			KY 0022373	6/30/77	Yes
Brandenburg (STP)	Meade	08217	Ohio River 335.50			KY 0021474	6/30/77	Yes
Brooksville (STP)	Bracken	08085	Locust Creek 548.60/8.90/ 1.50			KY 0025232	6/30/77	Yes
Camp Breckinridge (STP)	Union	08021	Casey Creek 139.60/20.53/ 4.40/1.10			KY 0021440	6/30/77	Yes
Campbell-Kenton San Dist. #1 (STP) (Bromley)	Kenton	08209	Ohio River 507.40			KY 0023477	1/31/76	No
Cloverport (STP)	Breckinridge	08217	Ohio River 268.70			KY 0026701	6/30/77	Yes
Crestview (STP)	Campbell	08078	Four Mile Creek 520.20/2.30/ 1.75					
Flatwoods (STP)	Greenup	08202	Ohio River 653.50			KY 0022918	6/30/77	Yes
Florence (STP)	Boone	08071	Gunpowder Creek 467.90/15.0/ 4.10/0.90			KY 0025917	6/30/77	Yes

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Hardinsburg (STP)	Breckinridge	08035	Hardins Creek 280.50/8.90/ 11.04			KY 0028363	6/30/77	Yes
Hawesville (STP)	Hancock	08218	Ohio River 256.90			KY 0020087	10/1/79	No
Henderson (STP)	Henderson	08222	Ohio River 175.60			KY 0020711	6/30/79	No
Hite Creek (STP)	Jefferson	08050	Hite Creek 385.60/1.60/ 0.65			KY 0022420	6/30/77	Yes
Kevil (STP)	Ballard	08002	Humphrey Creek 13.70/14.50/ 1.55/1.30					
La Center (STP)	Ballard	08001	Humphrey Creek 13.70/10.80/ 1.0/0.50			KY 0020893	6/30/77	Yes
La Grange (STP)	Oldham	08052	Brush Creek 385.60/20.80/ 1.60/1.87			KY 0020001	6/30/77	Yes
Lewisport (STP)	Hancock	08219	Ohio River 243.0			KY 0025241	12/31/79	No
Louisville (MSD)	Jefferson	08214	Ohio River 369.30			KY 0022411	6/30/77	Yes
Marion (STP)	Crittenden	08013	Crooked Creek 103.60/17.50/ 1.34			KY 0020061	6/30/77	No
Maysville (STP)	Mason	08206	Ohio River 569.70			KY 0020257	6/30/79	No

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
McCracken #1	McCracken	08008	Perkins Creek 42.0/9.7					
McCracken #2	McCracken	08008	Perkins Creek 42.0/9.30/0.60			KY 0025801	6/30/77	No
Morganfield (STP)	Union	08018	Lost Creek 138.40/6.20/0.60			KY 0021440	6/30/77	Yes
Owensboro (STP)	Daviess	08220	Ohio River 223.10			KY 0020095	6/30/79	No
Paducah (STP)	McCracken	08226	Ohio River 45.40			KY 0022799	6/30/77	Yes
Park Hill (STP)	Kenton	08977	Sleepy Hollow Creek 507.50/0.20/1.30					
Raceland (STP)	Greenup	08104	Pond Run 650.40/1.64					
Shively (STP)	Jefferson	08215	Ohio River 366.0			KY 0021253	6/30/77	Yes
South Shore (STP)	Greenup	08204	Ohio River 627.60			KY 0026131	12/31/79	No
Uniontown (STP)	Union	08018	Lost Creek 138.40/3.10/1.75			KY 0025844	6/30/77	Yes
Vanceburg (STP)	Lewis	08205	Ohio River 603.0			KY 0021512	6/30/77	Yes
Vine Grove (STP)	Hardin	08044	Otter Creek 345.0/17.17/1.20			KY 0024988	6/30/77	No

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

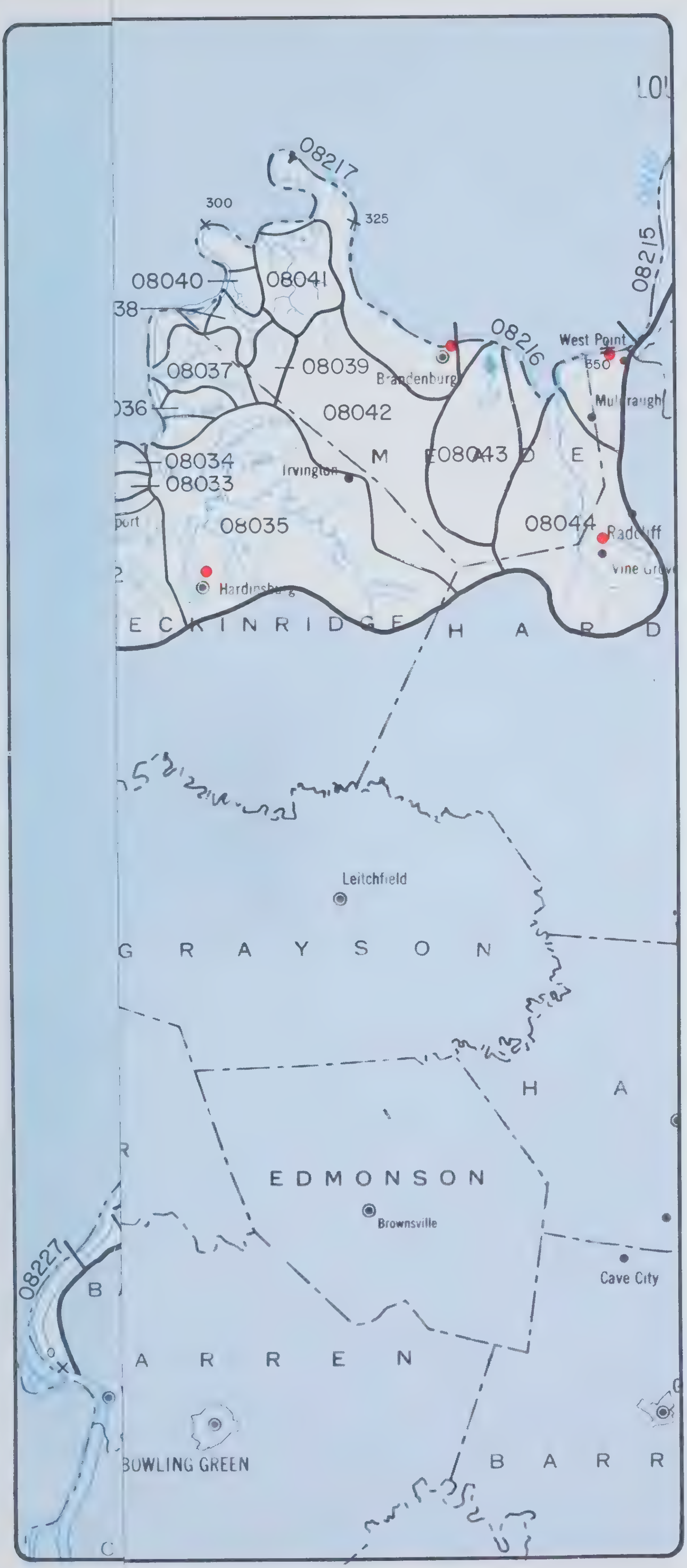
Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Walton (STP)	Boone	08068	Big Bone Creek 464.80/2.40/ 5.90/3.30/ 0.90/0.04					
Warsaw (STP)	Gallatin	08065	Dry Creek 451.50/1.20/ 1.0			KY 0028118	6/30/77	Yes
West Point (STP)	Hardin	08216	Ohio River 350.50			KY 0022152	6/30/77	No
Worthington (STP)	Greenup	08202	Ohio River 650.40			KY 0022926	6/30/79	No
Wurtland (STP)	Greenup	08103	Uhlens Run 648.60/0.70					

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Clay (STP) (Includes Wheatcroft STP)	Webster	10004	Vaughn Ditch 108.0/16.71/ 6.70/0.10			KY 0028096	6/30/77	Yes
Dawson Springs (STP)	Hopkins	10012	Tradewater R. 108.0/90.60			KY 0023868	6/30/77	Yes
Earlington (STP)	Hopkins	10009	Clear Creek 108.0/45.80/ 25.60			KY 0020966	6/30/77	Yes
Providence (STP)	Webster	10006	Owens Creek 108.0/40.80/ 2.40/0.19			KY 0021296	6/30/77	Yes
Sturgis (STP)	Union	10002	Cypress Creek 108.0/7.14/ 3.27/0.30			KY 0025895	6/30/79	Yes

EXHIBIT 4.3t (Continued) SIGNIFICANT MUNICIPAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	1975 Abatement Priority	NPDES Permit		
	County	Segment				Number	Expiration Date	Compliance Schedule
Olive Hill (STP)	Carter	11006	Tygarts Creek 628.20/77.70			KY 0025925	6/30/77	Yes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Hardinsburg
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Brownsville
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BOWLING GREEN
B A R R

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.4m-1

SIGNIFICANT MUNICIPAL DISCHARGERS

LEGEND

— · — · —	COUNTY OUTLINES
~~	STREAMS
━━━	BASIN OUTLINE
+ 25	RIVER MILES
08038	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

DISCHARGERS

▲	MAJOR DISCHARGERS (OVER 1 MGD)
●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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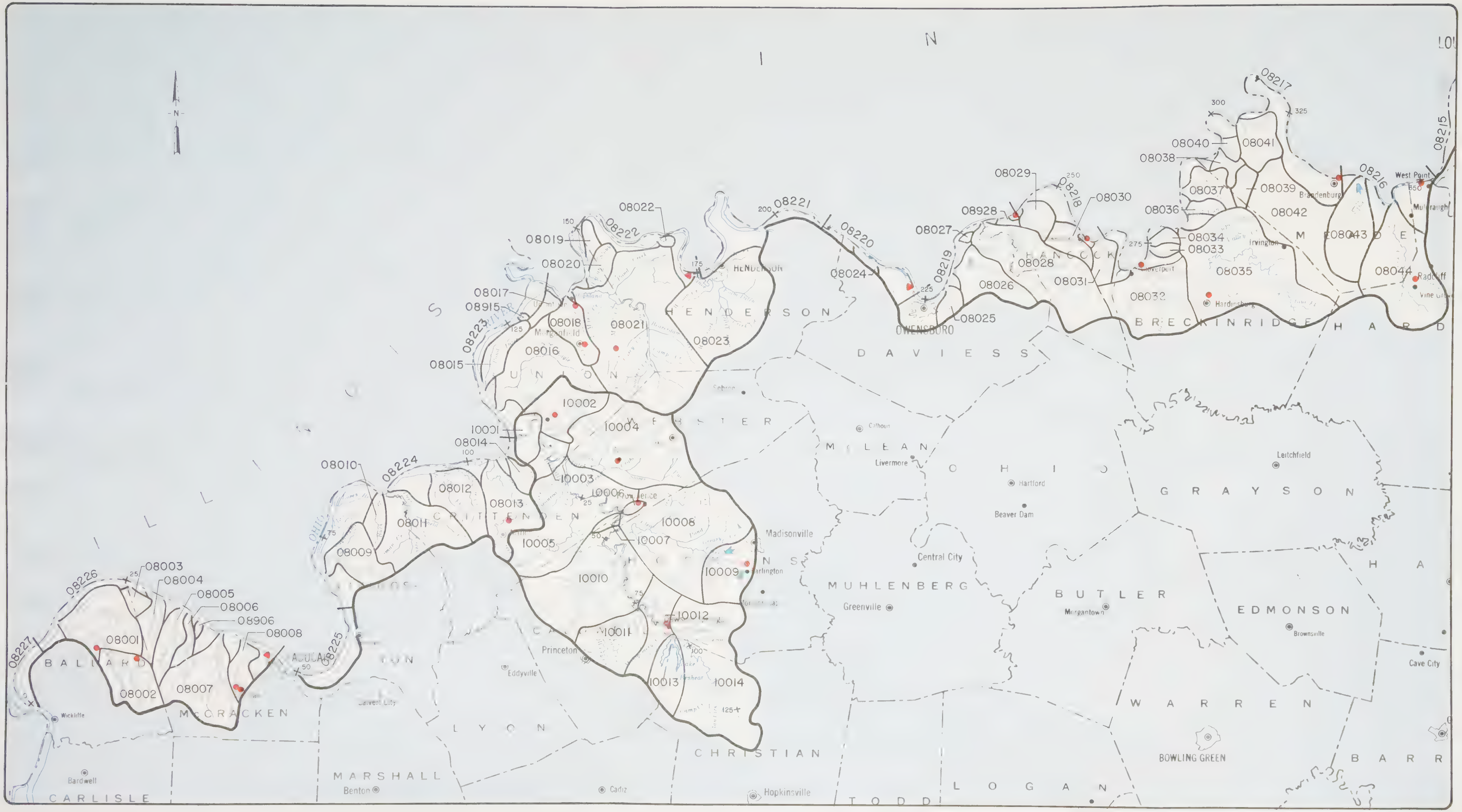
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McCRACKEN
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Greenville
Central City
Beaver Dam
Hartford
Livermore
Calhoun
Sebree
Morgantown
Brownsville
Leitchfield
Cave City
BOWLING GREEN
Princeton
Eddyville
Cadiz
Hopkinsville
Benton
Calvert City
Bardwell
Wickliffe
Hardinsburg
Irvington
Brandenburg
West Point
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Radcliff
Vine Grove
Hawesville
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OHIO RIVER

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

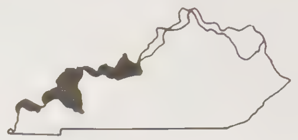

EXHIBIT 4.4m-1

SIGNIFICANT MUNICIPAL DISCHARGERS

LEGEND

- - - - COUNTY OUTLINES
~~~ STREAMS
━━ BASIN OUTLINE
+ 25 RIVER MILES
08038 SEGMENT NUMBERS
—— SEGMENT BOUNDARIES

DISCHARGERS

▲ MAJOR DISCHARGERS (OVER 1 MGD)
● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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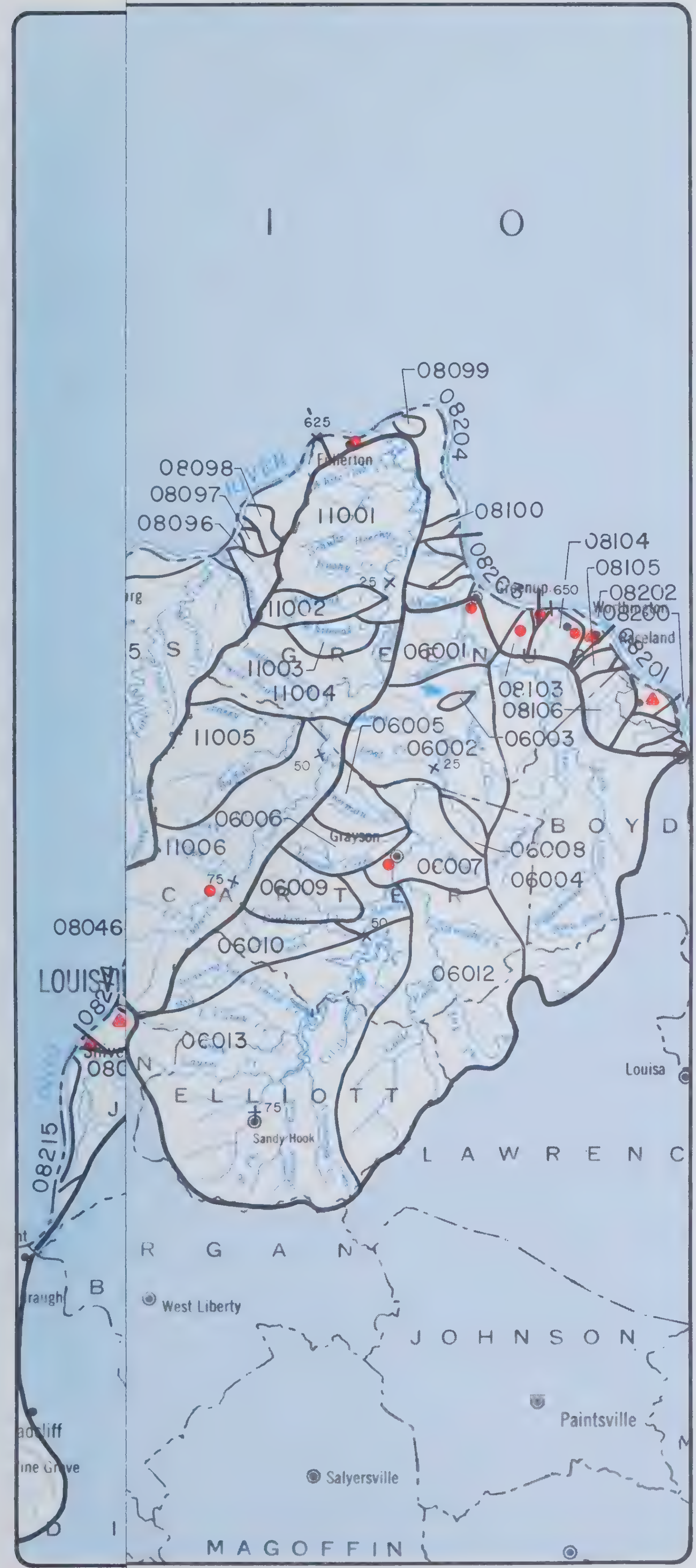
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.4m-2

SIGNIFICANT MUNICIPAL DISCHARGERS

LEGEND

- COUNTY OUTLINES
- STREAMS
- BASIN OUTLINE
- + 25 RIVER MILES
- 08085 SEGMENT NUMBERS
- SEGMENT BOUNDARIES

DISCHARGERS

▲ MAJOR DISCHARGERS (OVER 1 MGD)

● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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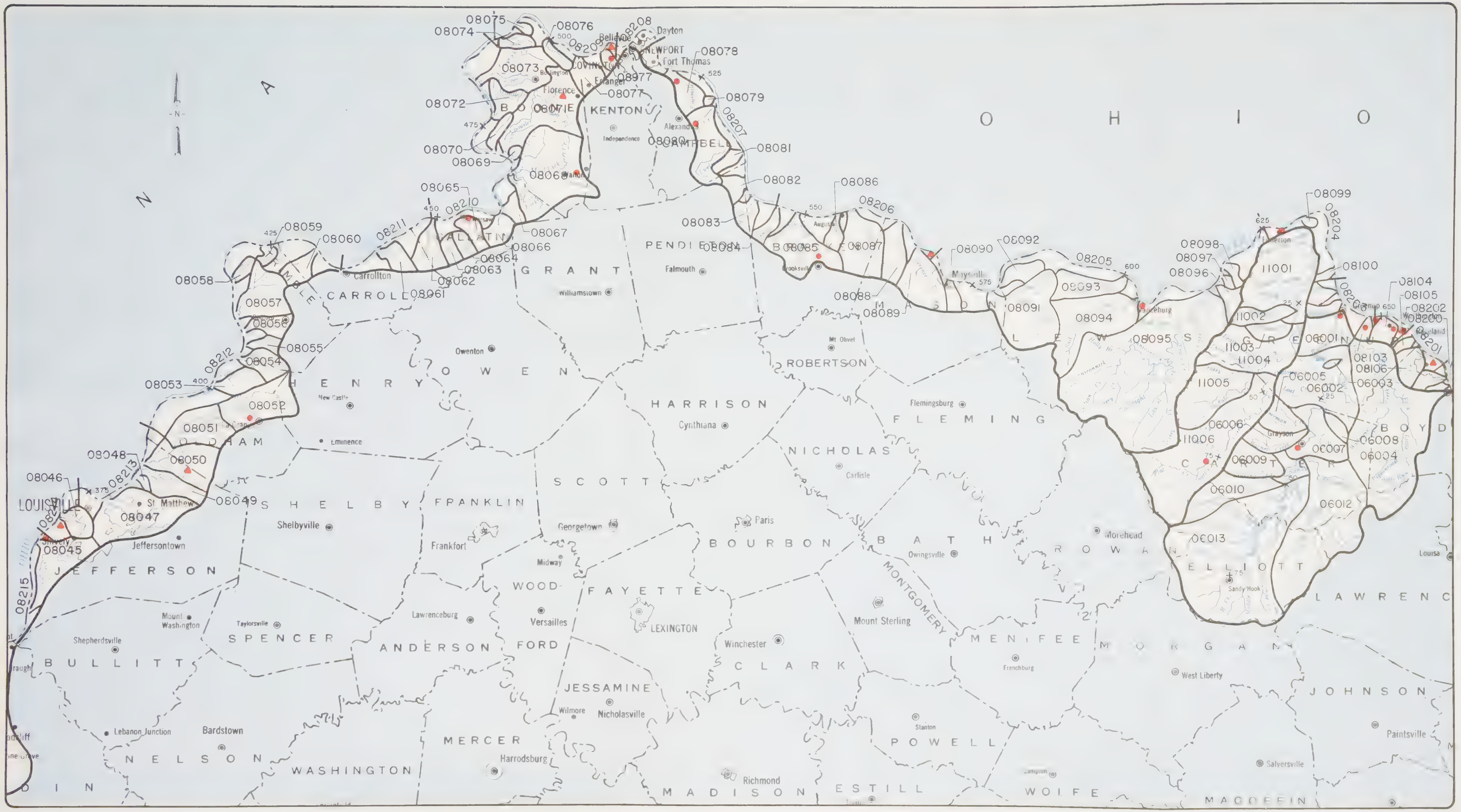
EXHIBIT 4.4m-2

SIGNIFICANT MUNICIPAL DISCHARGERS

OHIO RIVER BASIN AND MINOR TRIBUTARIES



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NEWPORT
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Bellevue
Fort Thomas
Erlanger
Florence
Burlington
Independence
Alexandria
Walton
Carrollton
Warsaw
Augusta
Brooksville
Maysville
Vanceburg
Greenup
Russell
Ashland
Falmouth
Williamstown
Owenton
New Castle
Eminence
La Grange
St. Matthews
Shively
Jeffersontown
Shelbyville
Frankfort
Georgetown
Midway
Versailles
LEXINGTON
Paris
Cynthiana
Carlisle
Mt Olivet
Flemingsburg
Owingsville
Morehead
Mount Sterling
Winchester
Frenchburg
West Liberty
Sandy Hook
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Paintsville
Salyersville
Lawrenceburg
Taylorsville
Mount Washington
Shepherdsville
Lebanon Junction
Bardstown
Harrodsburg
Wilmore
Nicholasville
Richmond
Stanton
Campton
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LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
+ 25 RIVER MILES
08085 SEGMENT NUMBERS
SEGMENT BOUNDARIES

DISCHARGERS

▲ MAJOR DISCHARGERS (OVER 1 MGD)
● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)
5 0 10 20
GRAPHIC SCALE IN MILES
Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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and any compliance schedule applicable to each of the municipal discharges. Exhibit 4.4m shows the location of the municipal discharges in the Ohio River Basin. All significant municipal discharges are also located and identified, together with all significant domestic, industrial and nonpoint sources, in the larger scale segment maps, Exhibit B-1.1m through B-13.1m in Appendix B. No abatement priorities are assigned to any of the municipal discharges at this time as recommended by the design and hydrology subcommittee. All the significant municipal discharges listed in Exhibit 4.3t are publicly owned and are eligible for federal assistance for water pollution control.

Two separate criteria are used to designate whether a municipal discharge is significant or not depending on whether a municipal plant is discharging directly into the Ohio River or into a minor tributary. On the Ohio River all discharges 50,000 gallons/day or more are considered to be significant, whereas on the minor tributaries all municipal discharges are considered significant. This distinction for classifying significant municipal discharges is required because the minimum 7-day 10-year low flow in the Ohio River at Ashland is 9,900 cfs whereas in most of the tributaries in the Ohio River Basin the 7-day 10-year low flow is zero. This causes a very small discharge to have a significant impact on the minor tributaries whereas on the Ohio River a small discharge has practically no noticeable effect.

Effluent characteristics of each of the significant municipal discharges listed in Exhibit 4.3t are presented in Exhibit B-1.4t in Appendix B. In order to get a complete picture of the significant municipal discharges it is also necessary to consider Exhibit 5.2t which contains compliance goals in terms of pollutants, the treatment needs to meet the compliance goals and estimated costs to reach those goals.

SIGNIFICANT DOMESTIC DISCHARGES

There are one hundred and sixty-six significant domestic discharges in Ohio River Basin. One hundred twenty-six of these discharges are on minor tributaries of the Ohio River. Twenty-one are on the Little Sandy River and its tributaries, eleven are on the Tradewater River and its tributaries, and eight are on Tygarts Creek and its tributaries. There are no significant domestic discharges on the Ohio River main stem. Exhibit 4.5t lists all significant domestic discharges along with the county and segment in which they are located, and the receiving streams, including river mile for each of these discharges. There are no reported water quality violations and no NPDES permits are issued for any of the significant domestic discharges. Therefore, in Exhibit 4.5t the columns under water quality violations, and NPDES permit owner, number, expiration date, and compliance schedule are left blank. These columns can be filled up in future when the appropriate information is available. Exhibit 4.6m shows the location of all domestic discharges in the basin. All significant domestic discharges are also identified and located, together with all significant municipal, industrial, and nonpoint discharges, in the segment maps, Exhibit B-1.1m through B-13.1m in Appendix B.

Two separate criteria are used to classify whether a domestic discharge is significant or not depending on whether the discharge is directly on the Ohio River or on its tributaries. On the Ohio River all discharges larger than 50,000 gallons/day are considered significant whereas on the tributaries all identifiable discharges are considered significant. These two criteria are necessary because the 7-day 10-year low flow on the tributaries in most cases is zero, whereas the minimum 7-day 10-year low flow on the Ohio River is 9,900 cfs. On the basis of these two criteria there are no significant domestic discharges on the Ohio River.

Effluent characteristics of each of the significant domestic discharges based on their type of treatment are presented in Exhibit B-1.14t in Appendix B. Those significant domestic discharges that require additional treatment to meet the water quality requirements for the Commonwealth of Kentucky are presented in Exhibit 5.2t together with their required treatment level.

SIGNIFICANT INDUSTRIAL DISCHARGES

Forty-nine industrial discharges are classified as significant in the Ohio River Basin. Twenty-six of these industries discharge their treated wastewater into the Ohio River and the rest into Ohio River tributaries. All significant industrial discharges are listed in Exhibit 4.7t including the location and segment in which each is located, the receiving stream with mile point for each discharge, and any water quality violations they may be causing. Also listed on this table are the principal SIC code, and NPDES permit data such as owner, number, expiration date and compliance schedule for each significant industrial discharge. Exhibit 4.8m shows the location of each significant industrial discharge in the basin. The identification and location of all significant industrial discharges are shown on Exhibits B-1.1m through B-13.1m in Appendix B together with all significant municipal, domestic and nonpoint source discharges.

Industries discharging more than 50,000 gallons/day into the Ohio River are in general classified as significant. In a few cases where the industries discharge less than 50,000 gallons/day in the Ohio River but for which NPDES permits have been issued, these industries are also classified as significant. All identifiable industries discharging into Ohio River tributaries are classified as significant industrial discharges.

Effluent characteristics of all significant industrial discharges are presented in Exhibit B-1.4t in Appendix B. Industries that violate the water quality standards and need additional treatment are listed in Exhibit 5.2t together with their required level of treatment so as to be able to meet the water quality requirements.

SIGNIFICANT NONPOINT SOURCES

Acid mine drainage, combined sewer overflows, and urban runoff are considered significant nonpoint sources in the basin. There are thirty-five segments in the basin receiving significant nonpoint source discharges of these fourteen segments have acid mine drainage, nine have urban runoff, eight have combined sewer overflows and four have both urban runoff and combined sewer overflows. Exhibit 4.9t lists all the nonpoint sources in the basin together with the county and segment in which these are located, and the receiving streams for these sources. Exhibit

EXHIBIT 4.5t SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Greenbo Lake St. Park	Greenup	06003	Little Sandy R. 645.0/14.0/2.0					
Humbel Oil Service Station	Boyd	06004	East Fork 645.0/11.70/14.90/6.30					
Sunoco Service Station	Boyd	06004	East Fork 645.0/11.70/14.90/6.0					
Cannonsburg Elem. & High School	Boyd	06004	East Fork 645.0/11.70/24.50					
Federal Correctional Inst.	Boyd	06004	East Fork 645.0/11.70/20.70/1.47/0.80/0.16					
Fairhill Estates, Inc.	Boyd	06004	East Fork 645.0/11.70/20.70/0.65					
Millers Little Giant Food Store	Boyd	06004	East Fork 645.0/11.70/20.70/1.80/1.30					
Crisps Dairy Treat	Boyd	06004	East Fork 645.0/11.70/20.70/1.80/1.30					
Hwy. Maintenance Garage	Boyd	06004	East Fork 645.0/11.70/20.70/1.47/0.30					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Smith Trailer Park	Boyd	06004	East Fork 645.0/11.70/ 20.70/1.80/ 1.07					
Ashland Oil Service Station	Carter	06005	Everman Creek 645.0/34.20/ 2.17					
Cloverleaf Trailer Park	Carter	06006	Barrett Creek 645.0/34.60/ 1.90					
Humble Oil Service Station	Carter	06006	Barrett Creek 645.0/34.60/ 0.90/0.50					
Sun Oil Service Station	Carter	06006	Barrett Creek 645.0/34.60/ 0.90/0.50					
East Carter County High School	Carter	06007	Little Sandy R. 645.0/38.70/ 0.60					
Conley's Trailer Park	Carter	06008	Wilson Creek 645.0/28.20/ 5.10/0.90					
Graham Junior High School	Carter	06009	Little Sinking Creek 645.0/46.90/ 5.40					
Celestial Camper Court	Carter	06010	Big Sinking Creek 645.0/49.90/ 0.60					
Hitchens Consol. School	Carter	06012	Little Fork 645.0/41.40/ 4.69					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Elliott County Elem. School	Elliot	06013	Little Sandy R. 645.0/74.10					
Lakeside Elem. School	Elliot	06013	Little Sandy R. 645.0/70.10/ 0.20/0.30					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Fin & Feather Lodge	Ballard	08001	Humphrey Creek 13.70/3.40/3.0/0.66					
Bandana Elem. School	Ballard	08001	Humphrey Creek 13.70/3.40/8.44/0.20					
Ballard County High School	Ballard	08001	Humphrey Creek 13.70/10.80/1.0/1.50/0.30					
Forrestdale School	McCracken	08005	Bayou Creek 33.60/8.70/0.65					
Paducah Realty Co. Apts.	McCracken	08007	Massac Creek 38.70/9.60/1.20					
Heath Upper Elem & High School	McCracken	08007	Massac Creek 38.70/4.20/3.50/0.10/0.60					
West Kentucky Youth Camp	Crittenden	08012	Hurricane Creek 95.40/0.68/8.04/1.30					
Buffalo Branch Trailer Park	Union	08015	Goose Pond Ditch 114.70/10.30/2.60					
Swope Trailer Park	Henderson	08023	Canoe Creek 174.60/4.07					
Carriage Mobile Home	Henderson	08023	Canoe Creek 174.60/4.20/7.30/1.90/0.25/0.43					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Cairo Elem. School	Henderson	08023	Canoe Creek 174.60/7.70/ 3.20/0.70/0.20					
E.H. Richmond Subd.	Daviess	08025	Yellow Creek 229.40/1.0/ 1.30/0.66/0.18					
Woodlawn Trailer Park	Daviess	08025	Yellow Creek 229.40/0.63					
Hillcrest Trailer Park	Daviess	08025	Yellow Creek 229.40/1.85/0.45					
Town & Country Trailer Park	Daviess	08025	Yellow Creek 229.40/2.30/ 0.50					
Lloyds Mechanical	Daviess	08025	Yellow Creek 229.40/5.30					
Colony Mobile Home Village	Daviess	08025	Yellow Creek 229.40/2.50/ 0.42					
Graham Estates Subd.	Daviess	08025	Yellow Creek 229.40/2.50/ 0.38					
Thruston School	Daviess	08025	Yellow Creek 229.40/1.90					
Maceo Elem. School	Daviess	08026	Pup Creek 230.70/0.50/ 3.70					
Midsouth Home Sites	Daviess	08026	Pup Creek 230.70/2.0/ 0.60					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Trail-A-Way Trailer Park	Daviess	08026	Pup Creek 230.70/1.50/ 1.10					
Rest Haven Convalescent Home	Hancock	08029	Yellow Creek 244.80/1.50					
Hancock County Branch Bank	Hancock	08029	Yellow Creek 244.80/4.50/ 0.53					
Windward Heights Subd.	Hancock	08030	Lead Creek 257.20/6.70/ 0.06/0.60					
Doe Valley San. Corp.	Meade	08043	Doe Run 339.20/1.40/ 0.20					
Forrest Hill Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 365.10/2.24/ 4.0					
Timothy Hill Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 355.90/4.35/ 1.10/1.60					
Valley Village San. Corp. Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 355.90/0.90					
Havalock Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 365.10/2.24/ 3.30					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
West Springfield Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 365.10/2.24/ 3.82					
Ford Haven Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 365.10/2.24/ 3.70					
Villa Anna Subd.	Jefferson	08045	Mill Creek & Mill Creek Cut-off 355.90/4.35/ 1.10/0.70					
Valley High School	Jefferson	08045	Mill Creek & Mill Creek Cut-off 355.90/4.35/ 0.60					
Woodhaven Medical School	Jefferson	08045	Mill Creek & Mill Creek Cut-off 355.90/4.35/ 1.10/1.69/0.30					
Ormsby Village, Anchorage	Jefferson	08047	Beargrass Creek 379.40/1.60/ 12.30					
Middletown Elem. School	Jefferson	08047	Beargrass Creek 379.40/1.60/ 12.80/1.80/0.50					
Foxboro Manor Subd.	Jefferson	08047	Beargrass Creek 379.40/1.60/ 12.80/0.20					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Douglas Hills Subd.	Jefferson	08047	Beargrass Creek 379.40/1.60/ 12.80/1.50					
Village Square Shopping Center	Jefferson	08047	Beargrass Creek 379.40/1.60/ 12.80/2.0					
University of Louisville, School of Music	Jefferson	08047	Beargrass Creek 379.40/1.60/ 3.90					
Louisville County Club	Jefferson	08047	Beargrass Creek 379.40/0.60					
New Market Subd.	Jefferson	08048	Unnamed Tributary 382.8/2.10/0.35					
Holiday Inn	Jefferson	08048	Unnamed Tributary 382.8/2.30/0.48					
Glenview Hill Subd.	Jefferson	08048	Unnamed Tributary 382.8/1.0/0.50					
Thorn Hill Subd.	Jefferson	08049	Goose Creek 384.50/2.36/ 0.80					
Central State Hospital	Jefferson	08049	Goose Creek 384.50/9.50					
Green Spring Subd.	Jefferson	08049	Goose Creek 384.50/0.50/ 2.70					
Murray Hill Subd.	Jefferson	08049	Goose Creek 384.50/0.50/ 6.20/0.22					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Barbor Manner Subd.	Jefferson	08049	Goose Creek 384.50/0.50/ 3.80/0.20					
Kentucky Children Home, Lyndon	Jefferson	08049	Goose Creek 384.50/7.40					
Westcreek Apts.	Jefferson	08049	Goose Creek 384.50/6.80					
Bancroft Subd.	Jefferson	08049	Goose Creek 384.50/5.50					
Plantation Subd.	Jefferson	08049	Goose Creek 384.50/6.45/ 0.80					
Old Brownsboro Place Subd.	Jefferson	08049	Goose Creek 384.50/4.70					
Rolling Hills Subd.	Jefferson	08049	Goose Creek 384.50/8.60					
Spring Valley Estates	Jefferson	08049	Goose Creek 384.50/4.0					
Hunting Creek North Subd.	Jefferson	08050	Harrods Creek 385.60/1.60/ 1.20					
Hunting Creek South Subd.	Jefferson	08050	Harrods Creek 385.60/1.60/ 0.65					
Timberlake Subd.	Jefferson	08050	Harrods Creek 385.60/2.60/0.20					
Willow Creek Subd.	Oldham	08050	Harrods Creek 385.60/6.10/ 2.30/1.60					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Cross Keys Development	Oldham	08050	Harrods Creek 385.60/6.10/ 5.30/0.40/1.20					
M.A. Stoess & Sons Subd.	Oldham	08050	Harrods Creek 385.60/6.10/ 5.30/1.30/0.10					
Oldham Co. High School	Oldham	08051	Harrods Creek 385.60/12.40/ 5.38					
St. Francis School	Oldham	08051	Harrods Creek 385.60/9.10/ 1.30					
Texaco Service Station	Oldham	08051	Harrods Creek 385.60/12.40/ 1.20/0.76/2.70					
Hwy. Maintenance Bldg.	Oldham	08052	Harrods Creek 385.60/17.30/ 2.30					
Ky. State Reformatory for Men	Oldham	08052	Harrods Creek 385.60/17.30/ 0.30/2.30					
Sugar Bay Rest.	Gallatin	08066	Little Sugar Creek 458.70/0.60					
Sun Oil Co. Service Station	Gallatin	08066	Little Sugar Creek 458.70/2.9/ 1.1/0.25					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Big Bone Mobile Home Park & Big Bone Grill	Boone	08068	Big Bone Creek 464.80/4.90/ 0.10/0.12					
Texaco Service Station	Boone	08068	Big Bone Creek 464.80/2.40/ 5.90/3.30/1.70					
Sunoco Service Station	Boone	08068	Big Bone Creek 464.80/2.40/ 5.90/1.25/1.50					
Walton Verona High School	Boone	08068	Big Bone Creek 464.80/2.40/5.90/ 3.30/1.40/0.40					
Sun Oil Co. Service Station	Boone	08068	Big Bone Creek 464.80/2.40/ 5.90/3.30/1.20					
Baker's, Elmo, Boone Inn	Boone	08068	Big Bone Creek 464.80/2.40/5.90/ 3.30/0.90/0.40					
Boron Oil Truck Plaza	Boone	08068	Big Bone Creek 464.80/2.40/ 11.98/0.12/1.77					
Days Inn Motel and Restaurant	Boone	08068	Big Bone Creek 464.80/2.40/ 11.98/0.12/1.70					
Standard Oil Service Station	Boone	08068	Big Bone Creek 464.80/2.40/ 4.0/1.10/0.50					
Big Bone Lick State Park	Boone	08068	Big Bone Creek 464.80/5.0					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Richwood Villa Mobile Home	Boone	08071	Gunpowder Creek 467.90/15.0/ 7.60					
Ky. International Raceway	Boone	08071	Gunpowder Creek 467.90/15.0/ 4.50/1.30					
Burl Parks Subd.	Boone	08073	Woolper Creek 481.60/7.20/ 4.30					
Hickory Hill Subd.	Boone	08073	Woolper Creek 481.60/7.20/ 3.70/1.10					
Boone Creek Subd.	Boone	08073	Woolper Creek 481.60/7.20/ 5.10/0.20					
Hebron Elem. School	Boone	08076	Elijah's Creek 499.50/2.30/ 0.80					
Chester Goodridge Elem. School	Boone	08076	Elijah's Creek 499.50/3.20/ 0.90					
Greater Cincinnati Airport	Boone	08076	Elijah's Creek 499.50/4.40/ 0.20					
Ky. Jockey Club	Boone	08077	Dry Creek 503.90/3.10/ 2.20/0.90					
Gejmann Bros. Subd.	Campbell	08078	Four Mile Creek 520.20/9.20					
Alexandria High School	Campbell	08078	Four Mile Creek 520.20/9.20					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Douglas Subd.	Campbell	08078	Four Mile Creek 520.20/3.80/ 2.80/0.80/0.20					
Newport National Bank	Campbell	08078	Four Mile Creek 520.20/3.80/ 2.80/1.40					
Schabel Motel	Campbell	08078	Four Mile Creek 520.20/3.0/2.60					
St. Joseph Parish Convent	Campbell	08078	Four Mile Creek 520.20/0.30/ 1.50/0.30					
Chatham Rest Home	Bracken	08087	Bracken Creek 555.0/3.24/5.10					
Bracken Center Apts.	Bracken	08087	Bracken Creek 555.0/3.24/ 2.30/1.30					
Simon Kenton Subd.	Mason	08089	Lawrence Creek 566.60/7.40/1.20					
Dr. Tenery Residence	Mason	08089	Lawrence Creek 566.60/5.30					
Ky. Department of Highway	Mason	08089	Lawrence Creek 566.60/7.90					
Ashland Service Station	Mason	08089	Lawrence Creek 566.60/7.40/1.56/ 1.0					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Washington Methodist Church	Mason	08089	Lawrence Creek 566.60/7.40/ 1.56/0.55					
Maysville Community College	Mason	08089	Lawrence Creek 566.60/7.40/ 1.53					
Maysville Vocations School	Mason	08089	Lawrence Creek 566.60/7.87					
Mason County High School	Mason	08089	Lawrence Creek 566.60/8.04					
Mason County H.S. Bus Garage	Mason	08089	Lawrence Creek 566.60/7.98					
Mason County Middle School	Mason	08089	Lawrence Creek 566.60/8.20					
Mason County San. District #2	Mason	08089	Lawrence Creek 566.60/7.0					
Mason County San. District #1	Mason	08089	Lawrence Creek 566.60/7.70					
Central Center Shopping	Mason	08089	Lawrence Creek 566.60/7.53					
Bon Haven Subd.	Mason	08090	Limestone Creek 573.0/0.88/ 1.10/0.40					
Pinewood Subd.	Mason	08090	Limestone Creek 573.0/2.34/ 0.12/0.70					
Mefford Hill	Mason	08090	Limestone Creek 573.0/0.88/1.70					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Tollesboro High School	Lewis	08091	Cabin Creek 578.50/12.60/ 0.60					
Tollesboro Elem. School	Lewis	08091	Cabin Creek 578.50/14.60/ 1.60					
Garrison School	Lewis	08095	Kinniconick Creek 613.20/1.50					
Grays Br. Elem. School	Greenup	08100	Grays Branch 639.0/2.35/ 0.65					
Ashland Plaza	Greenup	08105	White Oak Creek 655.50/1.52					
Greenup Mall	Greenup	08105	White Oak Creek 655.50/1.52/ 0.20					
Oakwood Mobile Home Trailer	Boyd	08106	Hood Creek 657.40/5.90					
Green Acres Trailer Center	Boyd	08106	Hood Creek 657.40/5.10/ 0.70					
Ashland Vocational Technical School	Boyd	08106	Hood Creek 657.40/0.76/ 4.80					
National Mine Service	Boyd	08106	Hood Creek 657.40/0.45					
Ashland Oil Service	Boyd	08106	Hood Creek 657.40/0.76					
Humble Oil Service Station	Boyd	08106	Hood Creek 657.40/0.80					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Breezeland Swim Club	Boyd	08106	Hood Creek 657.40/0.76/ 3.30					
Catletts Creek Elem. School	Boyd	08108	Catletts Creek 664.0/3.10					

EXHIBIT 4,5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

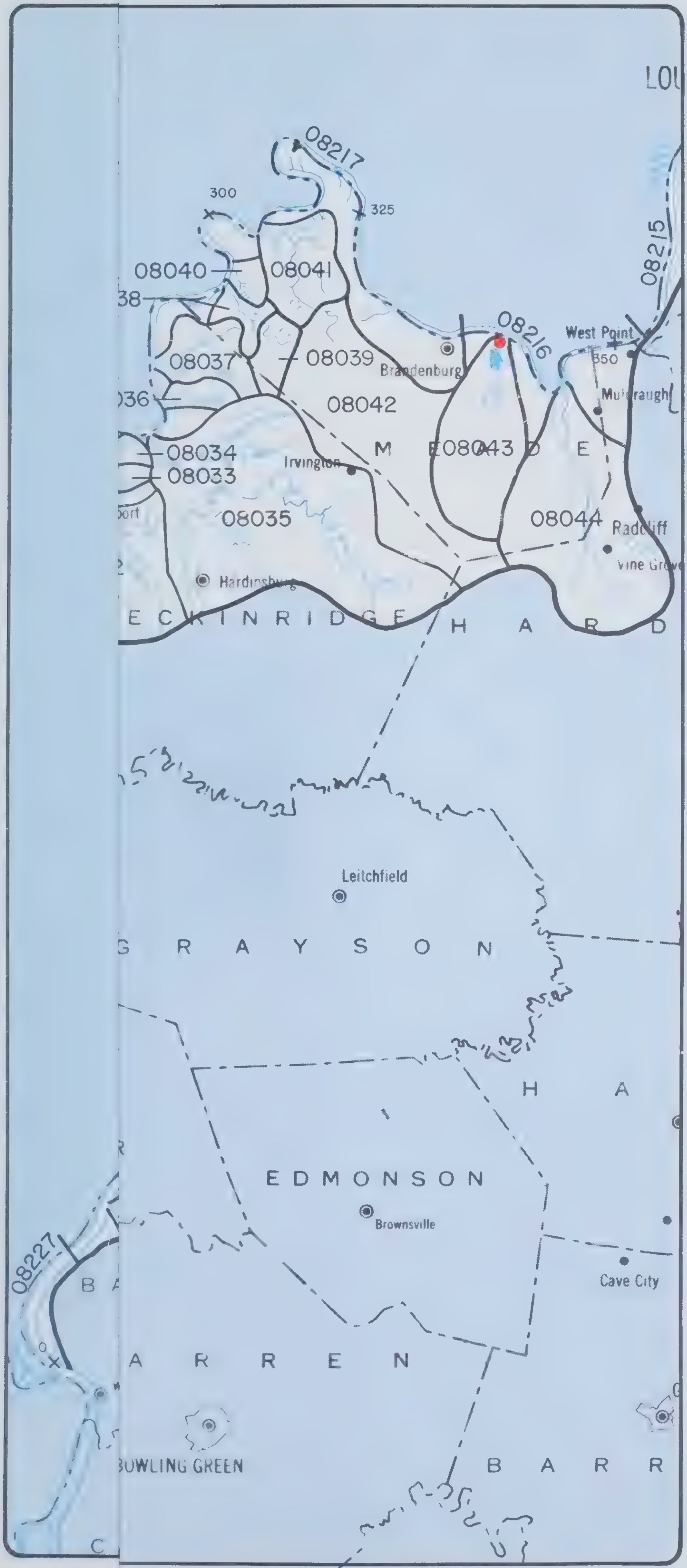
Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Bill's Truck Stop	Union	10002	Cypress Creek 108.0/7.14/ 2.60/0.55					
O'nan Trailer Park	Union	10002	Cypress Creek 108.0/7.14/ 4.96/1.10/0.20					
Hudson's Restaurant & Motel	Union	10003	Tradewater R. 108.0/11.30/ 1.30/0.55					
Dixon Elem. School	Webster	10004	Vaughn Ditch 108.0/16.71/ 7.61/7.15/1.30/ 1.90					
County Meadows Subd.	Webster	10008	Clear Creek 108.0/45.80/7.40/ 2.50/0.60					
Nebo High School	Hopkins	10008	Clear Creek 108.0/45.80/7.40/ 3.60/2.90/0.70					
W. Hopkins High School	Hopkins	10008	Clear Creek 108.0/45.80/ 10.20/1.60					
Chateau Mobile Home Park	Hopkins	10009	Clear Creek 108.0/45.80/ 24.35/0.70/0.30					

EXHIBIT 4,5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Frank Young's Subd.	Caldwell	10011	Flynn Fork 108.0/78.10/ 12.02/0.24/3.25/ 1.10/0.70					
4-H Camp for UK	Hopkins	10012	Tradewater R. 108.0/86.99/ 1.30					
Pennyrile State Park	Christian	10014	Tradewater R. 108.0/92.22/ 1.20/0.60					

EXHIBIT 4.5t (Continued) SIGNIFICANT DOMESTIC DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	NPDES Permit			
	County	Segment			Owner	Number	Expiration Date	Compliance Schedule
Greenup County Voc. School	Greenup	11001	Tygarts Creek 628.20/1.80					
Sunshine Elem. School	Greenup	11003	Lower White Oak Creek 628.20/6.40/0.30/0.40					
Carter City Consol. School	Carter	11005	Buffalo Creek 628.20/45.70/7.1					
West Carter County High School	Carter	11006	Tygarts Creek 628.20/76.10					
Standard Oil Service Station	Carter	11006	Tygarts Creek 628.20/73.40/0.50/0.30					
Lawton Elem. School	Carter	11006	Tygarts Creek 628.20/80.70/1.90/0.10					
Carter Caves State Park	Carter	11006	Tygarts Creek 628.20/65.30/1.38					
Upper Tygarts Jr. High	Carter	11006	Tygarts Creek 628.20/85.10/0.50					


LOU
08217
300
325
08215
08040
08041
38
08216
West Point
350
08037
08039
Brandenburg
36
Muldraugh
08042
08034
M
E08043 D
E
08033
Irvington
08035
08044
Radcliff
Vine Grove
Hardinsburg
ECKINRIDGE
H A R D
Leitchfield
G R A Y S O N
H A
EDMONSON
Brownsville
Cave City
08227
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 4.6m-1

SIGNIFICANT DOMESTIC DISCHARGERS

LEGEND

— · — ·	COUNTY OUTLINES
〰	STREAMS
━━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
——	SEGMENT BOUNDARIES

DISCHARGERS

●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

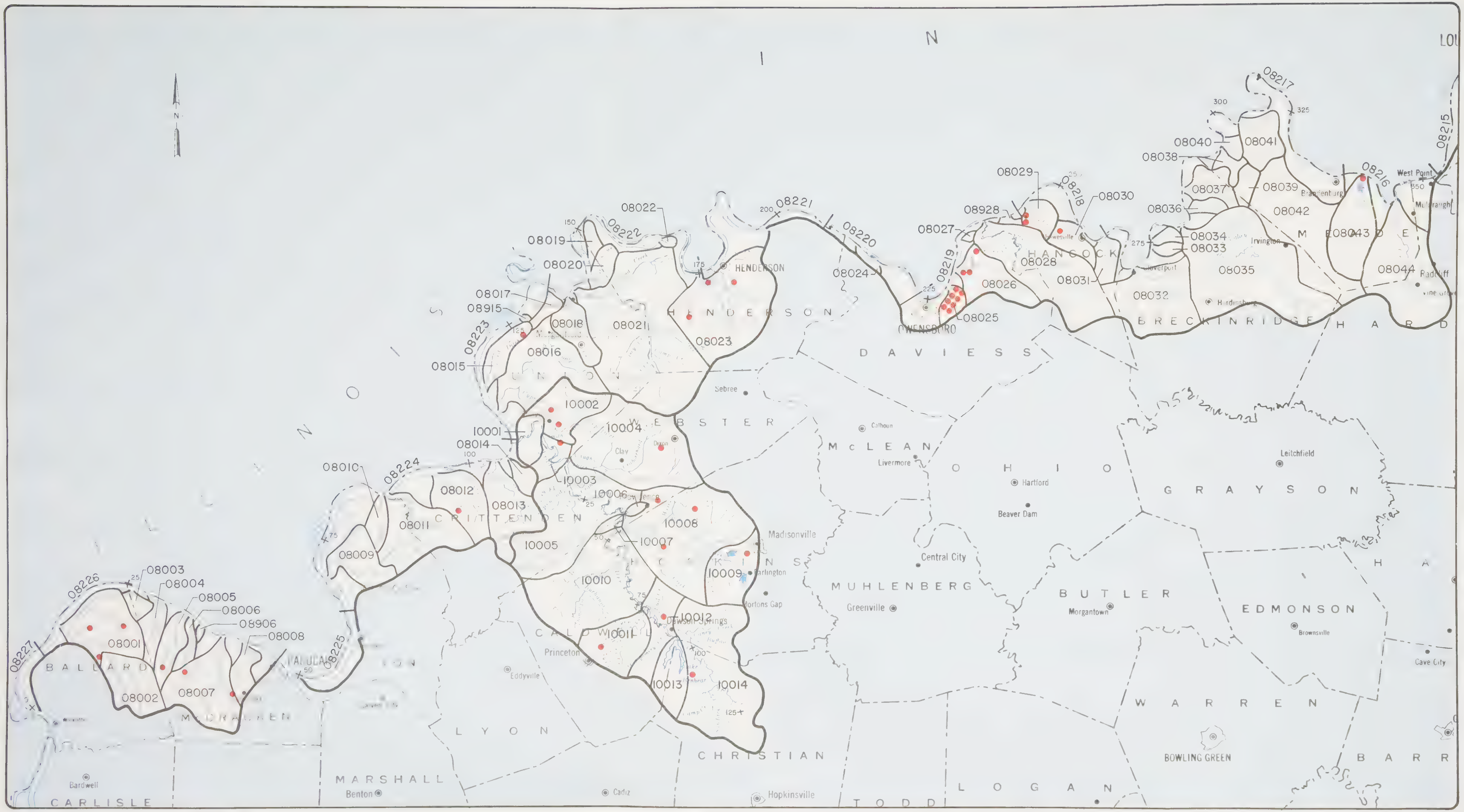
KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC

Boston New York Palo Alto Chicago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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 4.6m-1

SIGNIFICANT DOMESTIC DISCHARGERS

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
+ 25 RIVER MILES
08032 SEGMENT NUMBERS
SEGMENT BOUNDARIES

DISCHARGERS

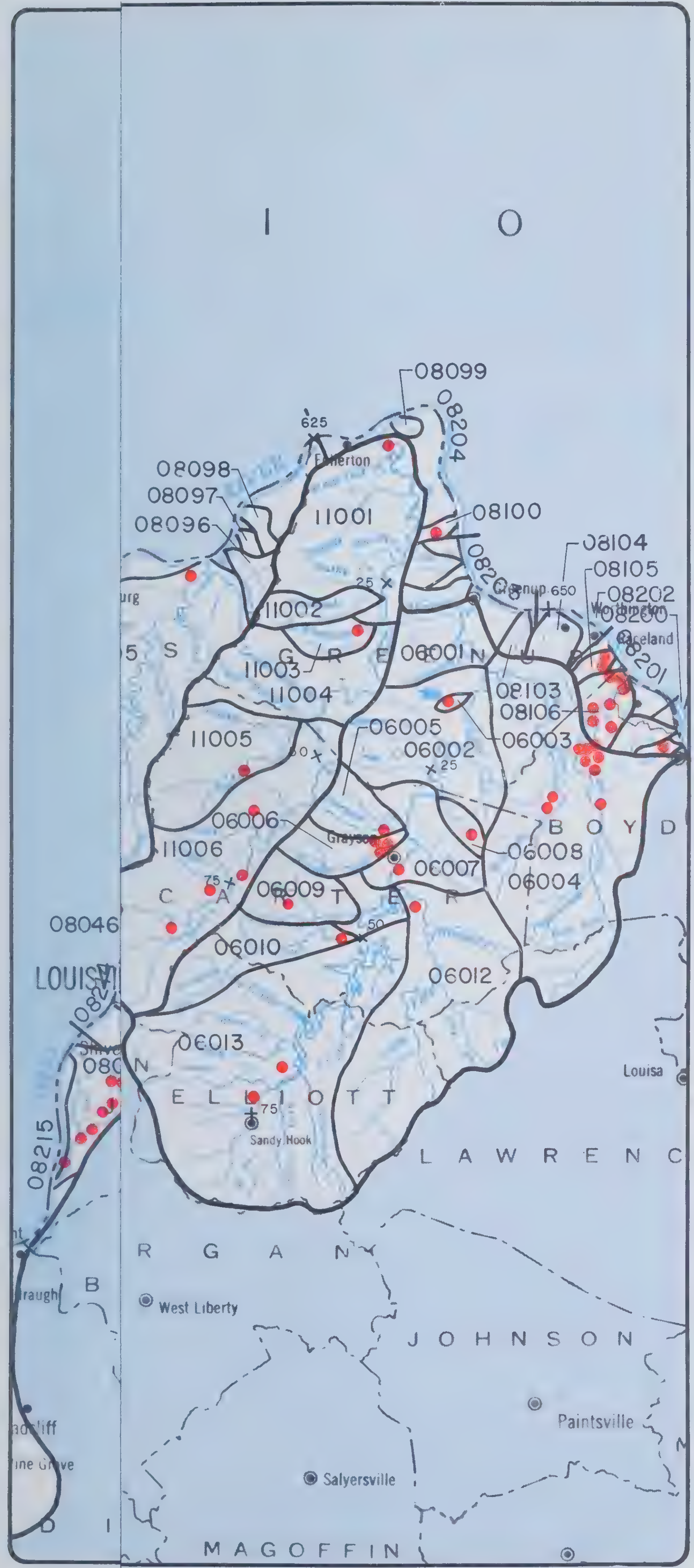
● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20
GRAPHIC SCALE IN MILES
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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Paintsville
Salyersville
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.6m-2

SIGNIFICANT DOMESTIC DISCHARGERS

LEGEND

- - — - - COUNTY OUTLINES

STREAMS

BASIN OUTLINE

+ 25 RIVER MILES

08088 SEGMENT NUMBERS

SEGMENT BOUNDARIES

DISCHARGERS

● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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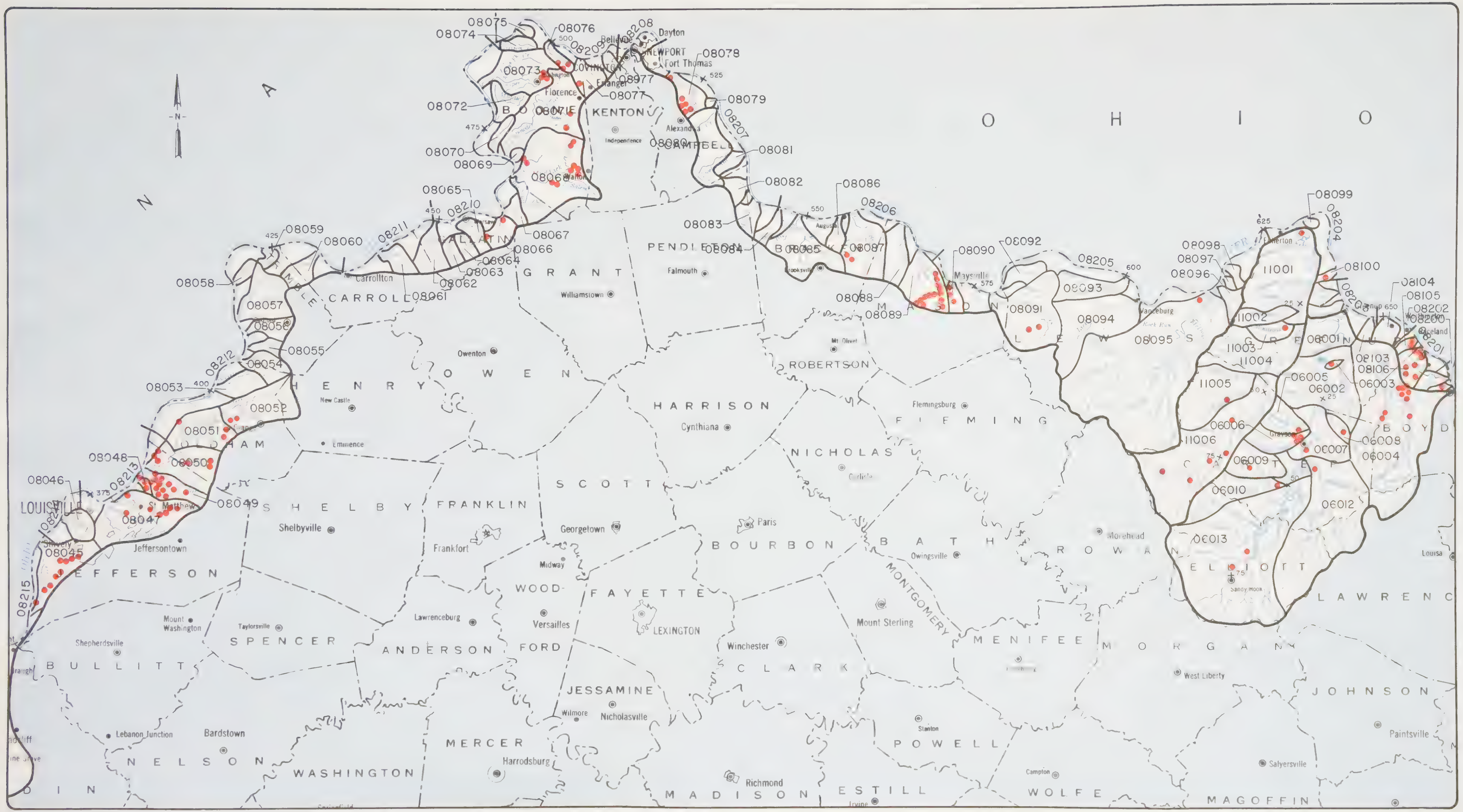

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Williamstown
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LEWIS
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Wurtland
Raceland
Russell
Flatwoods
Grayson
BOYD
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ELLIOTT
Sandy Hook
LAWRENCE
Louisa
HENRY
New Castle
OWEN
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SHELBY
Shelbyville
JEFFERSON
Jeffersontown
St. Matthews
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FRANKLIN
Frankfort
SCOTT
Georgetown
HARRISON
Cynthiana
ROBERTSON
Mt. Olivet
NICHOLAS
Carlisle
FLEMING
Flemingsburg
BOURBON
Paris
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Morehead
MONTGOMERY
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MENIFEE
MORGAN
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JOHNSON
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POWELL
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CLARK
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LEXINGTON
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Versailles
Midway
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Nicholasville
Wilmore
MERCER
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ANDERSON
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Taylorsville
BULLITT
Shepherdsville
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.6m-2

SIGNIFICANT DOMESTIC DISCHARGERS

LEGEND

— · — · —	COUNTY OUTLINES
~~	STREAMS
━━━	BASIN OUTLINE
+	RIVER MILES
08088	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

DISCHARGERS

●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)

5 0 10 20

GRAPHIC SCALE IN MILES

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E

METCALF & EDDY, INC

Boston New York Palo Alto Chicago

EXHIBIT 4.7t SIGNIFICANT INDUSTRIAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	Principal SIC Code	NPDES Permit			
	County	Segment				Owner	Number	Expiration Date	Compliance Schedule
Air Products & Chemicals	Boyd	08106	Hood Creek 657.40/0.41		28	Air Products & Chemicals Inc.	KY0000302	Sept.30,1978	
Alexandria Stone	Crittenden	10005	Tradewater R. 108.0/19.48/ 4.30/1.10		14		KY0001180		
American Olean Tile	Hancock	08928	Unnamed Tributary 241.20/2.90						
American Syn. Rubber	Jefferson	08214	Ohio River 368.30/1.70		28	Am. Syn. Rub.	KY0001589		
Anaconda Wire & Cable	Oldham	08052	Harrods Creek 385.60/23.20/ 3.60		33	Anaconda Wire & Cable Co.,N.Y.,N.Y.	KY0002208	Jan.1,1980	
Armco Steel	Greenup	08201	Ohio River 655.90		33	Armco Steel Boyd County	KY0000485	June 30,1976	
Atomic Energy Commission	McCracken	08005	Bayou Creek 33.60/6.50		NA	Union Carbide			
Borden Chemicals	Jefferson	08214	Ohio River 366.60		28	Borden Inc.	KY0001112		
C&O/B&O R.R.	Campbell	08207	Ohio River 521.90		40	The Chesapeake & Ohio Railroad Co.			
C&O/B&O R.R.	Greenup	08202	Ohio River 650.40		40	The Chesapeake & Ohio Railroad Co.	KY0000124		

EXHIBIT 4.7t (Continued) SIGNIFICANT INDUSTRIAL DISCHARGES

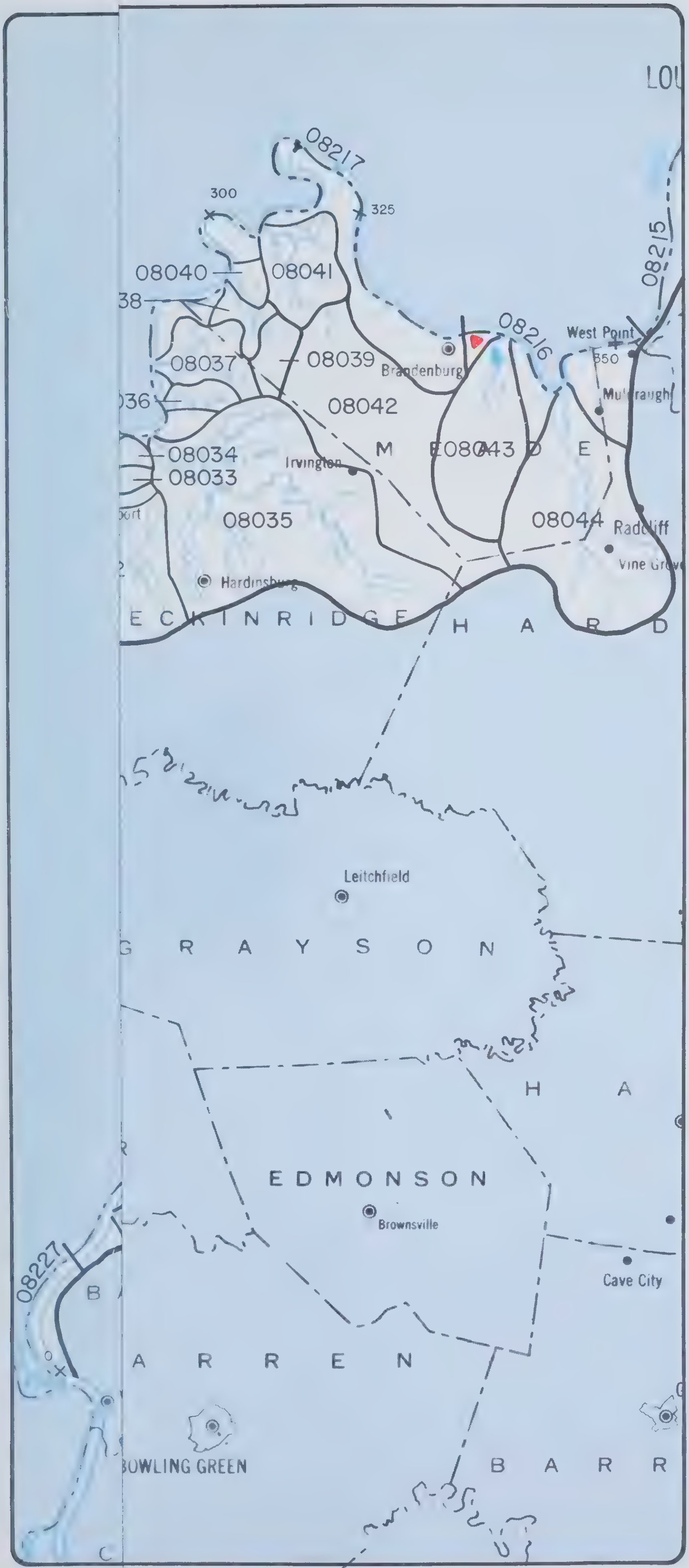
Discharge Name	Location		Receiving Water	Water Quality Violation	Principal SIC Code	NPDES Permit			
	County	Segment				Owner	Number	Expiration Date	Compliance Schedule
Clayton & Lambert	Oldham	08051	Harrods Creek 385.60/12.40/ 5.38		34	Clayton-Lambert	KY0002852		
Clopay	Bracken	08087	Bracken Creek 555.0/2.20		28	Clopay	KY0000361	March 18,1979	
Dow Corning	Carroll	08211	Ohio River 440.60		28	Dow Corning	KY0001279		
Dupont, E.I.	Jefferson	08046	Paddy Run 368.30/0.40		28	E.I. Dupont	KY0001350		
Dupont, E.I.	Greenup	08203	Ohio River 646.4		28	E.I. Dupont	KY0000493	June 30,1979	
Essex Wire Corp.	McCracken	08906	Unnamed Tributary 37.20/0.40/ 0.20						
Fleishman Distillery	Daviess	08219	Ohio River 223.40		20	Standard Brands			
Frankfort Materials	Mason	08205	Ohio River 576.0		14	Frankfort Materials			
Glenmore Distillery	Daviess	08219	Ohio River 226.10		20	Glenmore Distillery	KY0001031		
Grace, W.R.	Daviess	08219	Ohio River 230.1		26	W.R. Grace	KY0001953		
Green River Steel	Daviess	08219	Ohio River 228.30		33	Jessop Steel	KY0001571	July 1,1980	
Island Creek Coal Co.	Union	08915	Unnamed Tributary 128.10/1.60						
Kawneer	Carroll	08212	Ohio River 428.40		34	American Metal Climax Inc.	KY0001732	Jan.1,1980	

EXHIBIT 4.7t (Continued) SIGNIFICANT INDUSTRIAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	Principal SIC Code	NPDES Permit			
	County	Segment				Owner	Number	Expiration Date	Compliance Schedule
Kentucky Elec. Steel	Boyd	06004	East Fork 645.0/11.70/ 14.90/5.60/ 0.20						
Kern's Meat Processing	Bracken	08085	Locust Creek 548.60/4.10/ 3.80/0.80/ 0.90						
Klarer	Jefferson	08047	Beargrass Ck. 379.40/1.10/ 2.90		49	Armour & Co.	KY0001813	March 31,1976	
M & T Chemical	Carroll	08211	Ohio River 437.90		28	American Can Co.	KY0001431		
Mansbach	Boyd	08201	Ohio River 659.3		49				
Martin Marietta	Hancock	08029	Yellow Creek 244.80/1.50		14	Martin Marietta	KY0002666	Sept.30,1978	
Medley Distillery	Daviess	08024	Fulkerson Ditch 212.10/4.60		20				
Medley Distillery	Daviess	08219	Ohio River 223.70		20	Renfield Corp.	KY0001082		
Mico Mfg. Co.	Elliott	06013	Little Sandy R. 645.0/74.30						
National Aluminum	Hancock	08218	Ohio River 254.80		33	National Steel Corp.	KY0002461		
National Southwire Aluminum	Hancock	08218	Ohio River 253.50		33	National Steel Corp.	KY0001821	Jan.1,1980	
Nugent Sand. Co.	Jefferson	08213	Ohio River 379.7		14	Nugent Sand Co.	KY0002763		
Oldham Co. Stone (Crestwood)	Oldham	08050	Harrods Creek 385.60/6.10/ 2.70/1.80/ 0.50						

EXHIBIT 4.7t (Continued) SIGNIFICANT INDUSTRIAL DISCHARGES

Discharge Name	Location		Receiving Water	Water Quality Violation	Principal SIC Code	NPDES Permit			
	County	Segment				Owner	Number	Expiration Date	Compliance Schedule
Olin Chemical Co.	Meade	08216	Ohio River 338.10		28	Olin Corp.	KY0002127	Dec.30,1979	
Parker Tobacco Co.	Mason	08089	Lawrence Ck. 566.60/7.40/ 0.50						
Peabody Coal Co. #2	Union	08021	Highland Ck. 139.60/25.0/ 1.50/1.20						
Pittsburg & Midway Coal Co.	Hopkins	10008	Clear Creek 108.0/45.80/ 15.19/1.40/ 0.37						
Reynolds Metal	Jefferson	08046	Paddy Run 368.30/1.20		33	Reynolds	KY0001007	Jan.1,1980	
Semet Solvay	Boyd	08200	Ohio River 662.4		33	Allied	KY0000558		
Stauffer Chemical	Jefferson	08215	Ohio River 336.50		28	Stauffer Chemical	KY0002780	Dec.31,1980	
Wald Mfg. Co.	Mason	08090	Limestone Creek 573.0/0.78		37	Wald Mfg. Co.	KY000477		
Wescor	Hancock	08218	Ohio River 260.40		26	Corco Inc. & Western Kraft	KY0001708		
Western Kraft	Hancock	08217	Ohio River 262.10		26	Western	KY0001716		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OHIO RIVER BASIN AND MINOR TRIBUTARIES

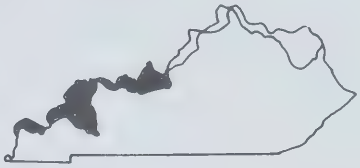

EXHIBIT 4.8m-1

SIGNIFICANT INDUSTRIAL DISCHARGERS

LEGEND

- - · - -	COUNTY OUTLINES
~	STREAMS
━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES

DISCHARGERS

▲	MAJOR DISCHARGERS (OVER 1 MGD)
●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)
△	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U. S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC
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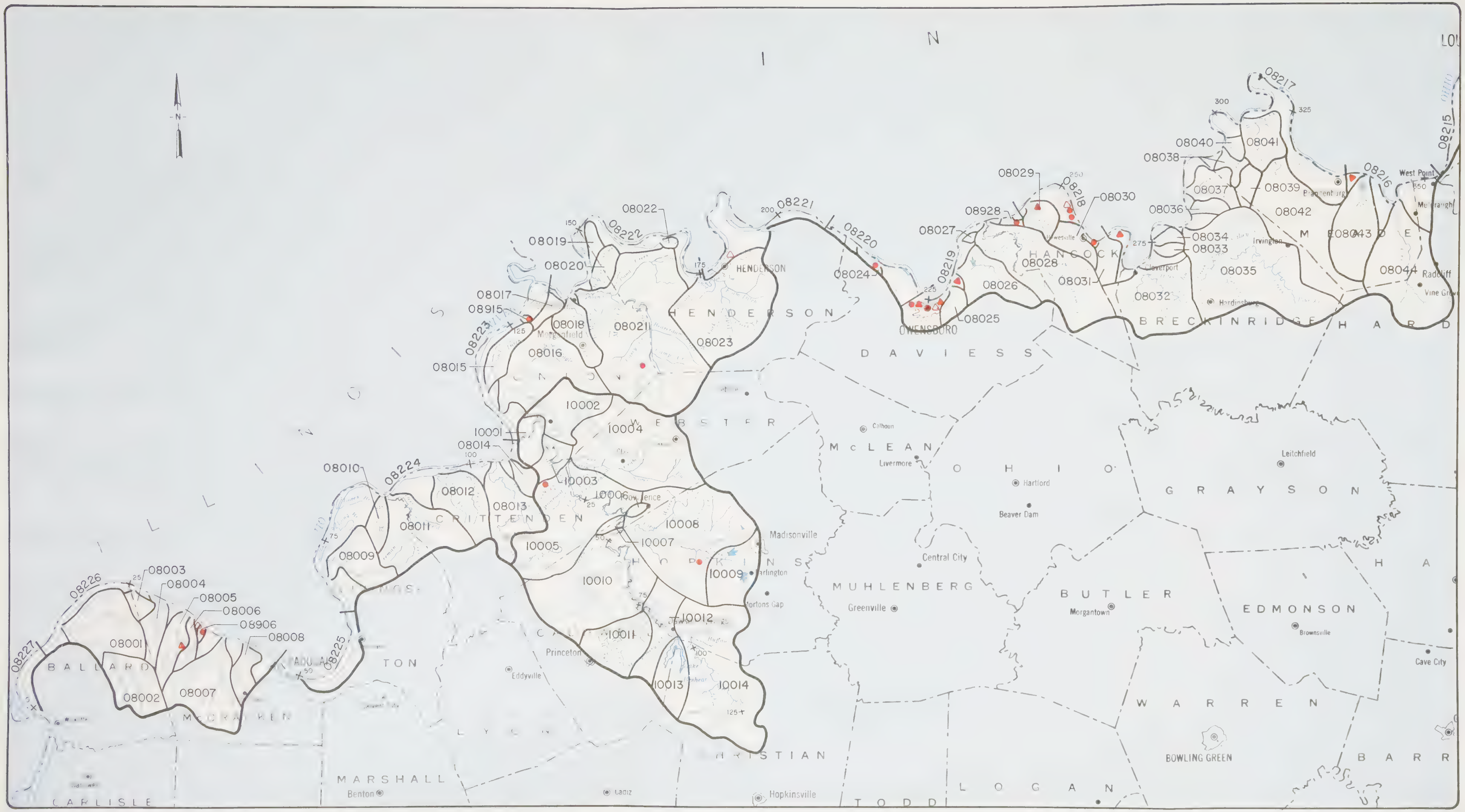
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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.8m-1

SIGNIFICANT INDUSTRIAL DISCHARGERS

LEGEND

— · — · —	COUNTY OUTLINES
~	STREAMS
——	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
——	SEGMENT BOUNDARIES

DISCHARGERS

▲	MAJOR DISCHARGERS (OVER 1 MGD)
●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)
△	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
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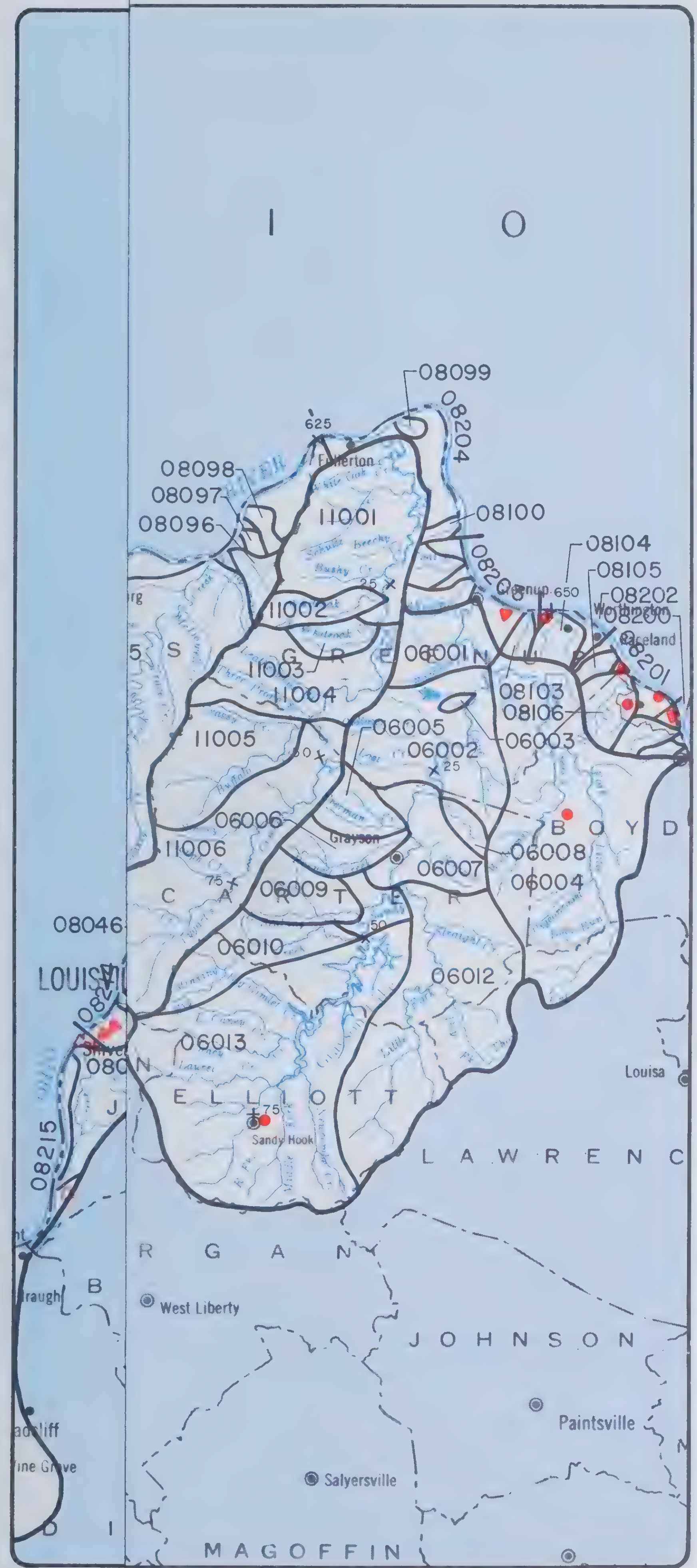
OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.8m-2

SIGNIFICANT INDUSTRIAL DISCHARGERS



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Paintsville
Salyersville
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LEGEND

— · — · —	COUNTY OUTLINES
~~	STREAMS
━━━	BASIN OUTLINE
+ 25	RIVER MILES
08088	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

DISCHARGERS

▲	MAJOR DISCHARGERS (OVER 1 MGD)
●	PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)
△	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

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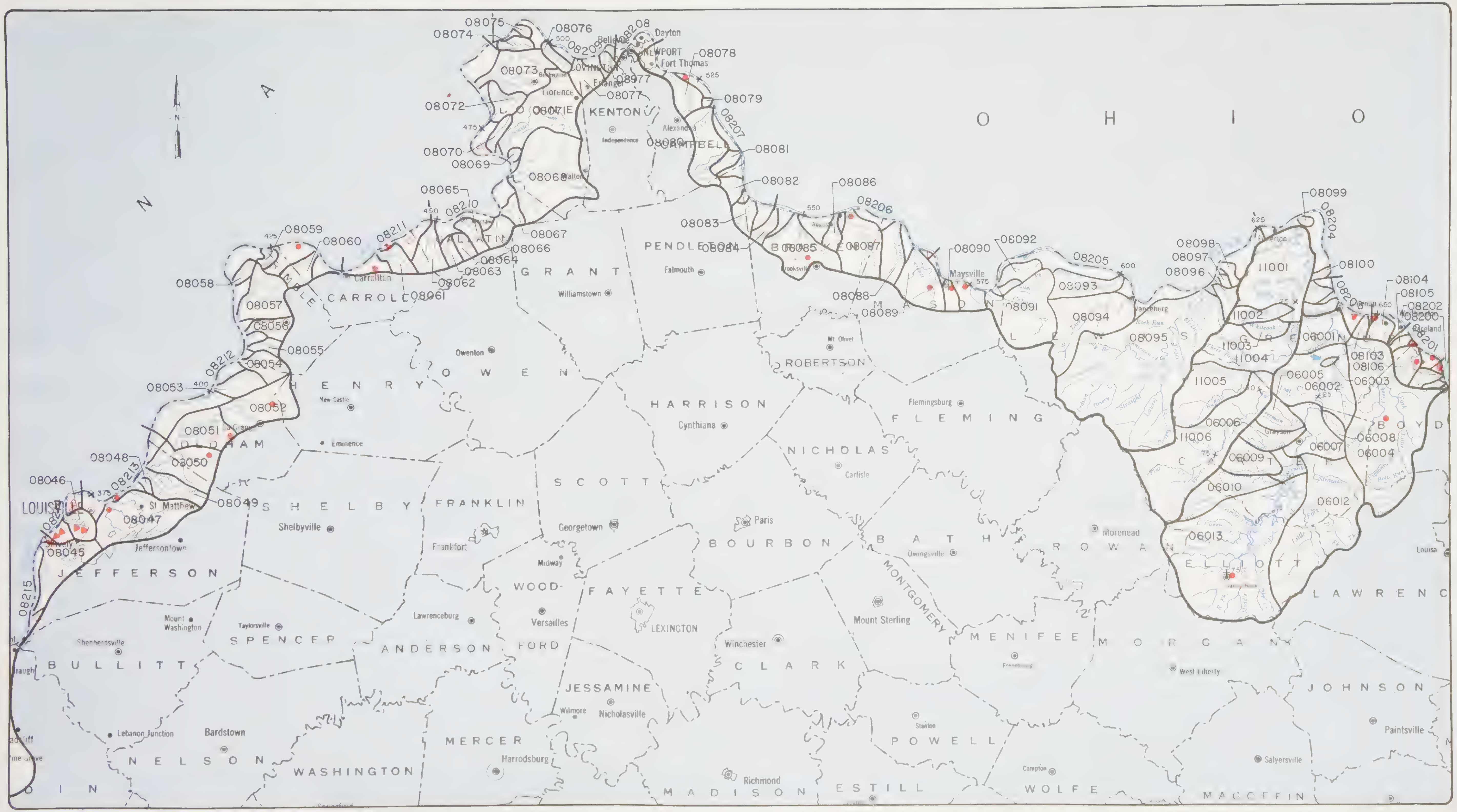
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M O N T G O M E R Y
Mount Sterling
M E N I F E E
Frenchburg
M O R G A N
West Liberty
J O H N S O N
Paintsville
M A G O F F I N
Salyersville
W O L F E
Campton
P O W E L L
Stanton
E S T I L L
M A D I S O N
Richmond
C L A R K
Winchester
B O U R B O N
Paris
S C O T T
Georgetown
F A Y E T T E
LEXINGTON
J E S S A M I N E
Wilmore
Nicholasville
W O O D F O R D
Versailles
Midway
F R A N K L I N
Frankfort
A N D E R S O N
Lawrenceburg
M E R C E R
Harrodsburg
W A S H I N G T O N
S H E L B Y
Shelbyville
S P E N C E R
Taylorsville
Mount Washington
B U L L I T T
Shepherdsville
N E L S O N
Bardstown
Lebanon Junction
H A R D I N
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 4.8m-2

SIGNIFICANT INDUSTRIAL DISCHARGERS

LEGEND

- COUNTY OUTLINES
- STREAMS
- BASIN OUTLINE
- $+^{25}$ RIVER MILES
- 08088 SEGMENT NUMBERS
- SEGMENT BOUNDARIES

DISCHARGERS

- ▲ MAJOR DISCHARGERS (OVER 1 MGD)
- ● PRINCIPAL DISCHARGERS (LESS THAN 1 MGD)
- △ POWER PLANTS (COOLING WATER DISCHARGE ONLY)

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data U S Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC

Boston New York Palo Alto Chicago

EXHIBIT 4.9t SIGNIFICANT NONPOINT DISCHARGES

Nonpoint Source	Location		Receiving Water	Water Quality Violation	Compliance Schedule	Recommended Management or Pollution Control Program
	County	Segment				
Acid Mine Drainage	Carter	06011	Little Sandy River			
Acid Mine Drainage	Elliott Carter	06012	Little Fork			
Acid Mine Drainage	Elliott Carter	06013	Little Sandy River			
Acid Mine Drainage	Daviess	08026	Pup Creek			
Acid Mine Drainage	Daviess Hancock	08028	Blackford Creek			
Urban Runoff	Jefferson	08045	Mill Creek			
Combined Sewer	Jefferson	08046	Paddy Run			
Urban Runoff	Jefferson	08047	Beargrass Creek			
Urban Runoff	Jefferson	08049	Goose Creek			
Urban Runoff	Jefferson Oldham	08050	Harrods Creek			
Urban Runoff	Boone	08071	Gunpowder Creek			

EXHIBIT 4.9t (Continued) SIGNIFICANT NONPOINT DISCHARGES

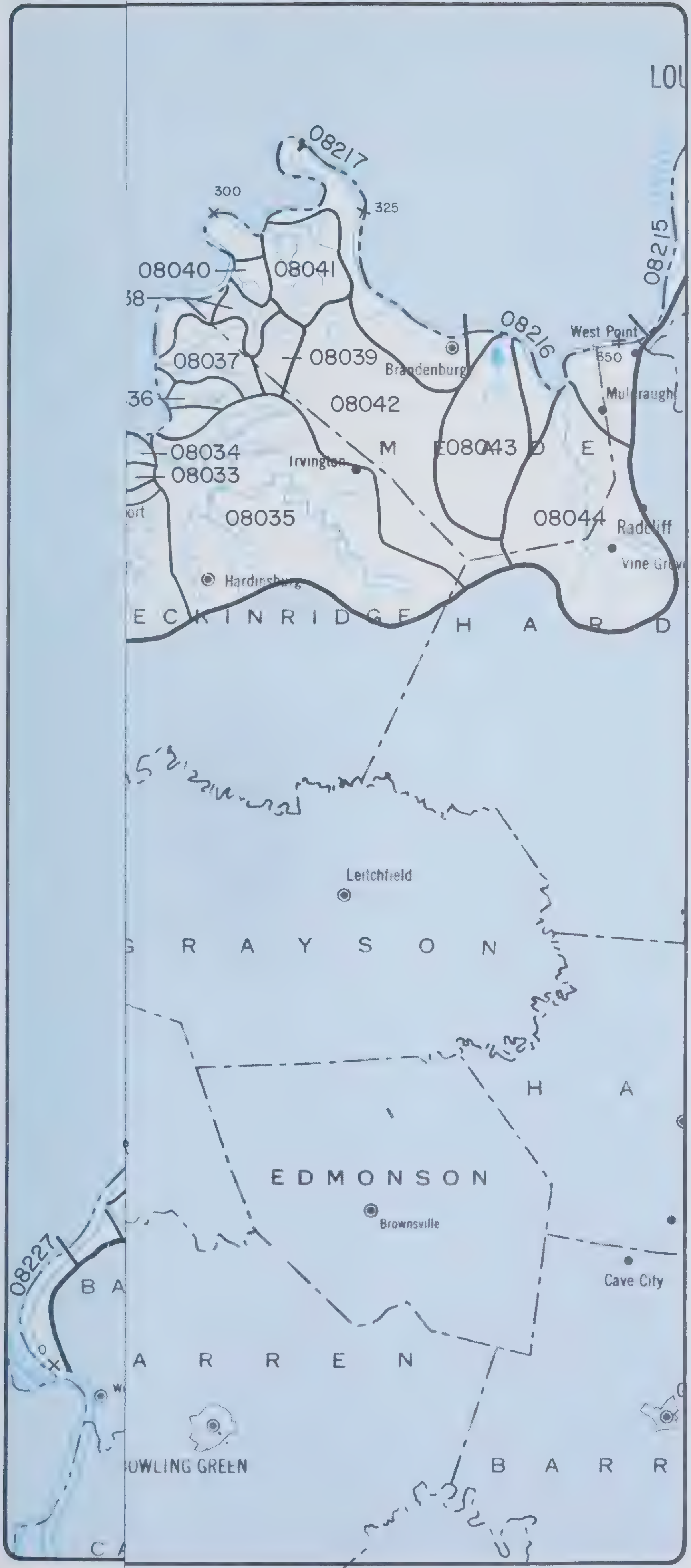
Nonpoint Source	Location		Receiving Water	Water Quality Violation	Compliance Schedule	Recommended Management or Pollution Control Program
	County	Segment				
Acid Mine Drainage	Crittenden Union	10003	Tradewater River			
Acid Mine Drainage	Webster Union	10004	Vaughn Ditch			
Acid Mine Drainage	Crittenden Caldwell Webster	10005	Tradewater River			
Acid Mine Drainage	Crittenden Caldwell	10007	Tradewater River			
Acid Mine Drainage	Hopkins Webster	10008	Clear Creek			
Acid Mine Drainage	Hopkins	10009	Clear Creek			
Acid Mine Drainage	Caldwell Hopkins	10010	Tradewater River			
Acid Mine Drainage	Caldwell Hopkins	10012	Tradewater River			
Acid Mine Drainage	Christian Hopkins	10014	Tradewater River			
Combined Sewer	Boyd	08200	Ohio River			

EXHIBIT 4.9t (Continued) SIGNIFICANT NONPOINT DISCHARGES

Nonpoint Source	Location		Receiving Water	Water Quality Violation	Compliance Schedule	Recommended Management or Pollution Control Program
	County	Segment				
Combined Sewer Urban Runoff	Boyd Greenup	08201	Ohio River			
Urban Runoff	Greenup	08202	Ohio River			
Combined Sewer	Mason	08205	Ohio River			
Combined Sewer	Campbell Kenton	08208	Ohio River			
Combined Sewer Urban Runoff	Kenton	08209	Ohio River			
Combined Sewer	Carroll	08211	Ohio River			
Combined Sewer	Jefferson	08213	Ohio River			
Combined Sewer Urban Runoff	Jefferson	08214	Ohio River			
Urban Runoff	Jefferson	08215	Ohio River			
Combined Sewer	Daviess	08219	Ohio River			
Urban Runoff	Daviess Henderson	08220	Ohio River			

EXHIBIT 4.9t (Continued) SIGNIFICANT NONPOINT DISCHARGES

Nonpoint Source	Location		Receiving Water	Water Quality Violation	Compliance Schedule	Recommended Management or Pollution Control Program
	County	Segment				
Combined Sewer	Henderson	08221	Ohio River			
Urban Runoff	Henderson	08222	Ohio River			
Combined Sewer Urban Runoff	McCracken	08226	Ohio River			


LOU
08217
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325
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08040
08041
38
08037
08039
Brandenburg
08216
West Point
350
Muldraugh
36
08042
08034
08033
Irvington
M
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D
E
ort
08035
08044
Radcliff
Vine Grove
Hardinsburg
ECKINRIDGE
H A R D
Leitchfield
G R A Y S O N
H A
EDMONSON
Brownsville
Cave City
08227
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BOWLING GREEN
B A R R
C A

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.10m-1

SIGNIFICANT NON-POINT SOURCES

LEGEND

— - — -	COUNTY OUTLINES
~	STREAMS
━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES

DISCHARGERS

CS	CITIES WITH COMBINED SEWERS
⬭	ACID MINE DRAINAGE

5 0 10 20

GRAPHIC SCALE IN MILES

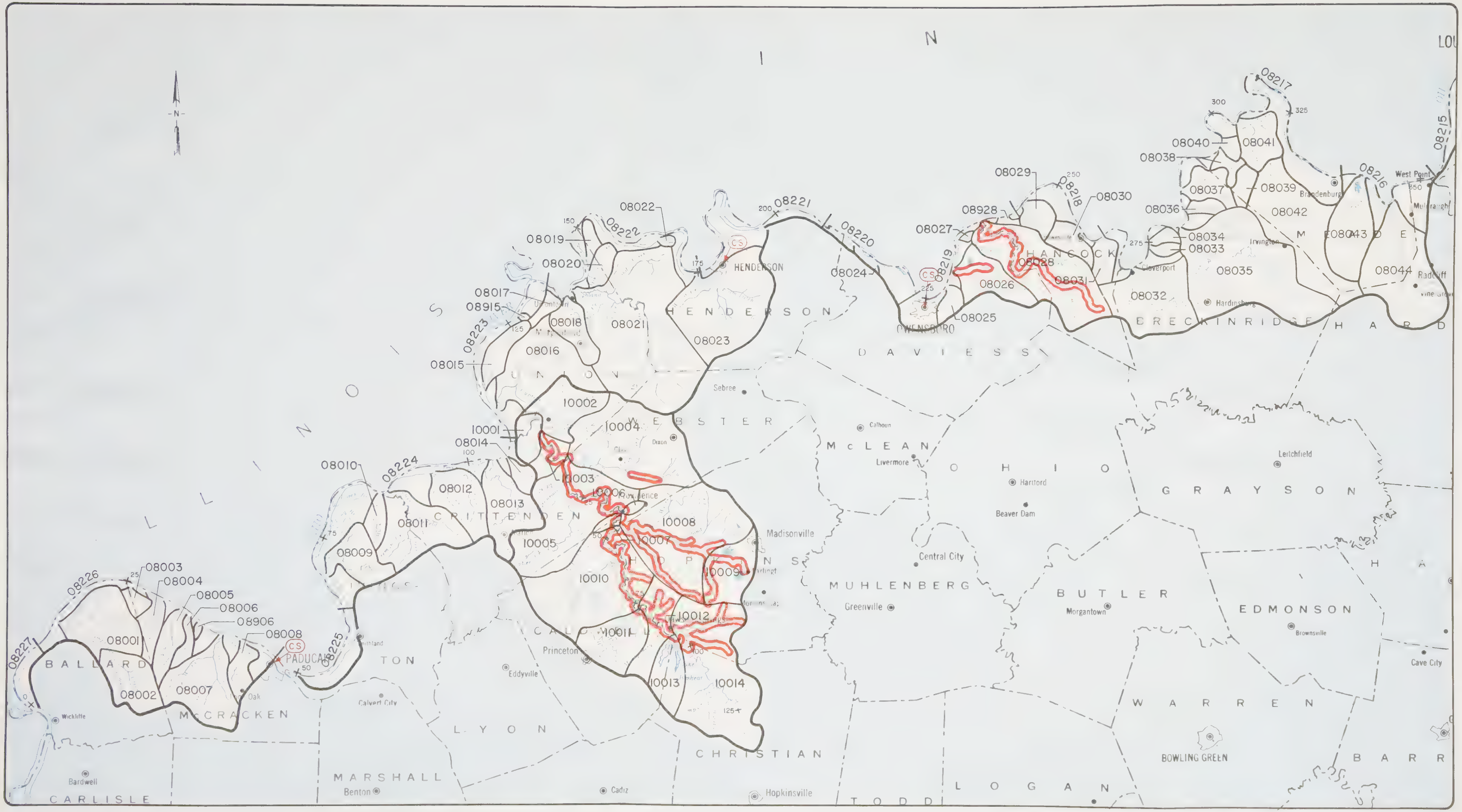
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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McCRACKEN
PADUCAH
CS
CARLISLE
MARSHALL
LYON
CALDWELL
CRITTENDEN
UNION
WEBSTER
HENDERSON
HENDERSON
CS
DAVIESS
OWENSBORO
CS
HANCOCK
BRECKINRIDGE
McLEAN
OHIO
GRAYSON
HARDIN
MUHLENBERG
BUTLER
EDMONSON
WARREN
BARREN
LOGAN
TODD
CHRISTIAN
HOPKINS
MEADE
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Calvert City
Eddyville
Princeton
Cadiz
Hopkinsville
Madisonville
Central City
Greenville
Sebree
Dixon
Calhoun
Livermore
Hartford
Beaver Dam
Morgantown
Leitchfield
Brownsville
Cave City
BOWLING GREEN
Cloverport
Hardinsburg
Irvington
Brandenburg
West Point
Radcliff
Providence
Marion
Morganfield
Uniontown
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.10m-1

SIGNIFICANT NON-POINT SOURCES

LEGEND

- - - COUNTY OUTLINES
STREAMS
BASIN OUTLINE
+ 25 RIVER MILES
08032 SEGMENT NUMBERS
SEGMENT BOUNDARIES

DISCHARGERS

(CS) CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
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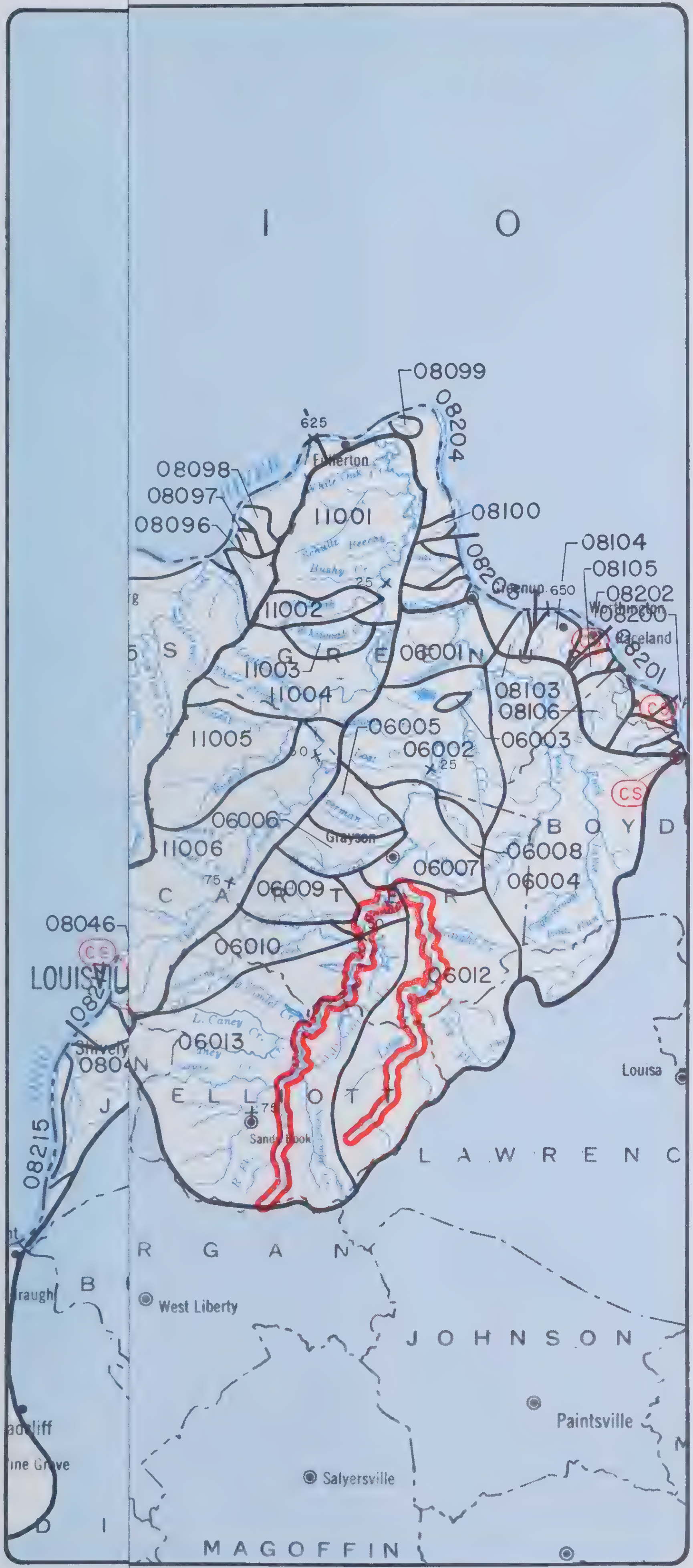
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Raceland
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25
06006
Grayson
B O Y D
11006
06008
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06004
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C A R T E R
06009
08046
LOUISVILLE
06010
06012
L. Caney Cr.
Shively
06013
0804N
Louisa
J
E L L I O T T
75
Sandy Hook
08215
L A W R E N C E
M O R G A N
B
West Liberty
J O H N S O N
Paintsville
Salyersville
M A G O F F I N

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 4.10m-2

SIGNIFICANT NON-POINT SOURCES

LEGEND

- — - — - COUNTY OUTLINES
- STREAMS
- ━━ BASIN OUTLINE
- + 25 RIVER MILES
- 08088 SEGMENT NUMBERS
- —— SEGMENT BOUNDARIES

DISCHARGERS

- CS CITIES WITH COMBINED SEWERS
- ACID MINE DRAINAGE

5 0 10 20

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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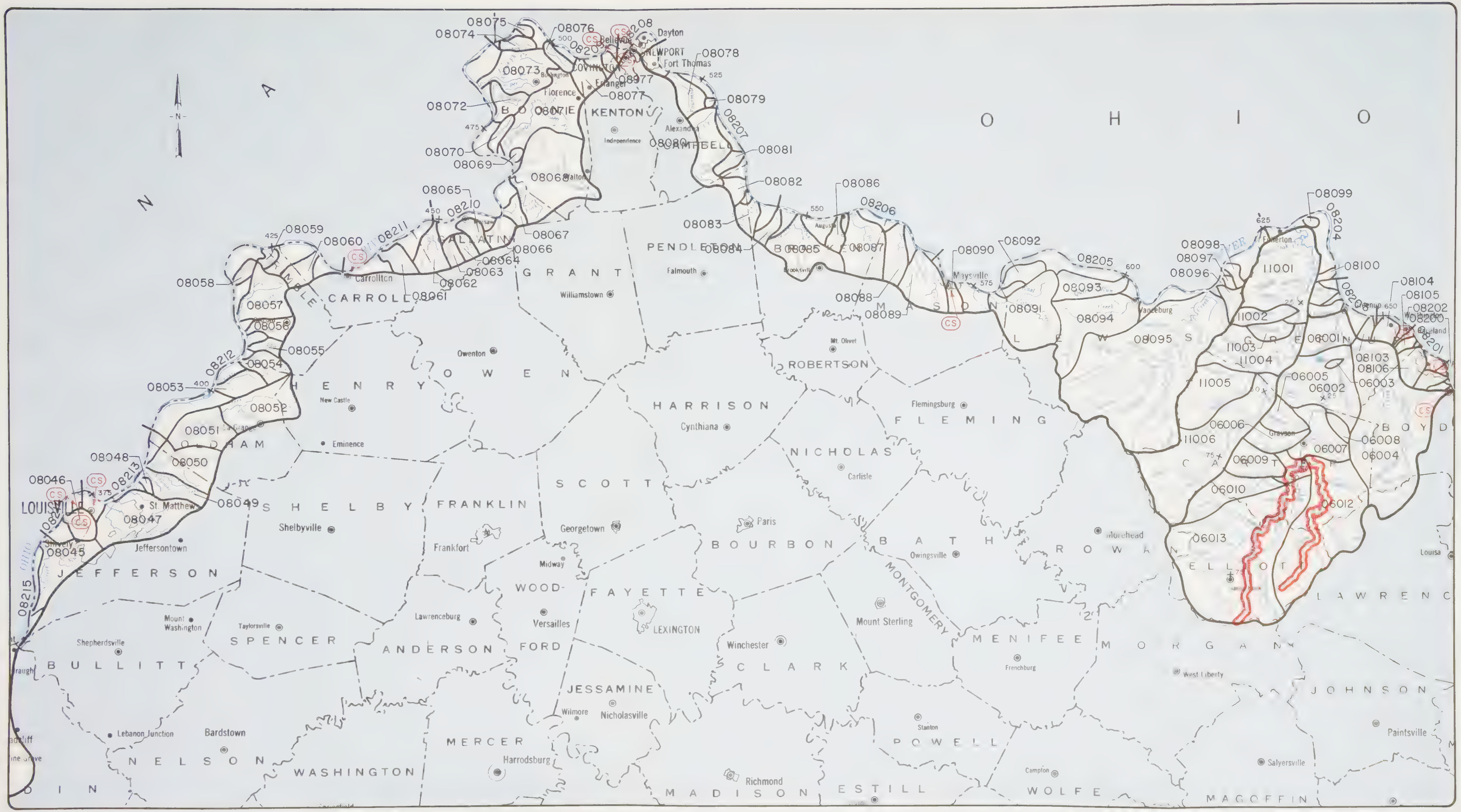
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OWEN
PENDLETON
BRACKEN
MASON
LEWIS
GREENUP
BOYD
CARTER
ELLIOTT
LAWRENCE
ROBERTSON
HARRISON
NICHOLAS
FLEMING
BATH
ROWAN
SHELBY
FRANKLIN
SCOTT
BOURBON
WOODFORD
FAYETTE
MONTGOMERY
MENIFEE
MORGAN
JOHNSON
SPENCER
ANDERSON
BULLITT
NELSON
WASHINGTON
MERCER
JESSAMINE
CLARK
POWELL
ESTILL
MADISON
WOLFE
MAGOFFIN
Dayton
Bellevue
NEWPORT
Fort Thomas
COVINGTON
Erlanger
Florence
Burlington
Independence
Alexandria
Walton
Carrollton
Williamstown
Falmouth
Owenton
New Castle
Eminence
La Grange
St. Matthews
Shively
Jeffersontown
Brooksville
Augusta
Maysville
Vanceburg
Fullerton
Greenup
Worthington
Russell
Flatwoods
Grayson
Louisa
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Cynthiana
Carlisle
Flemingsburg
Paris
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Morehead
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

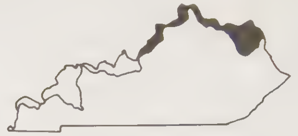

EXHIBIT 4.10m-2

SIGNIFICANT NON-POINT SOURCES

LEGEND

- ‐ · ‐ · ‐ COUNTY OUTLINES
- ─ STREAMS
- ━ BASIN OUTLINE
- + 25 RIVER MILES
- 08088 SEGMENT NUMBERS
- ─ SEGMENT BOUNDARIES

DISCHARGERS

- CS CITIES WITH COMBINED SEWERS
- 🟥 ACID MINE DRAINAGE

5 0 10 20
GRAPHIC SCALE IN MILES

Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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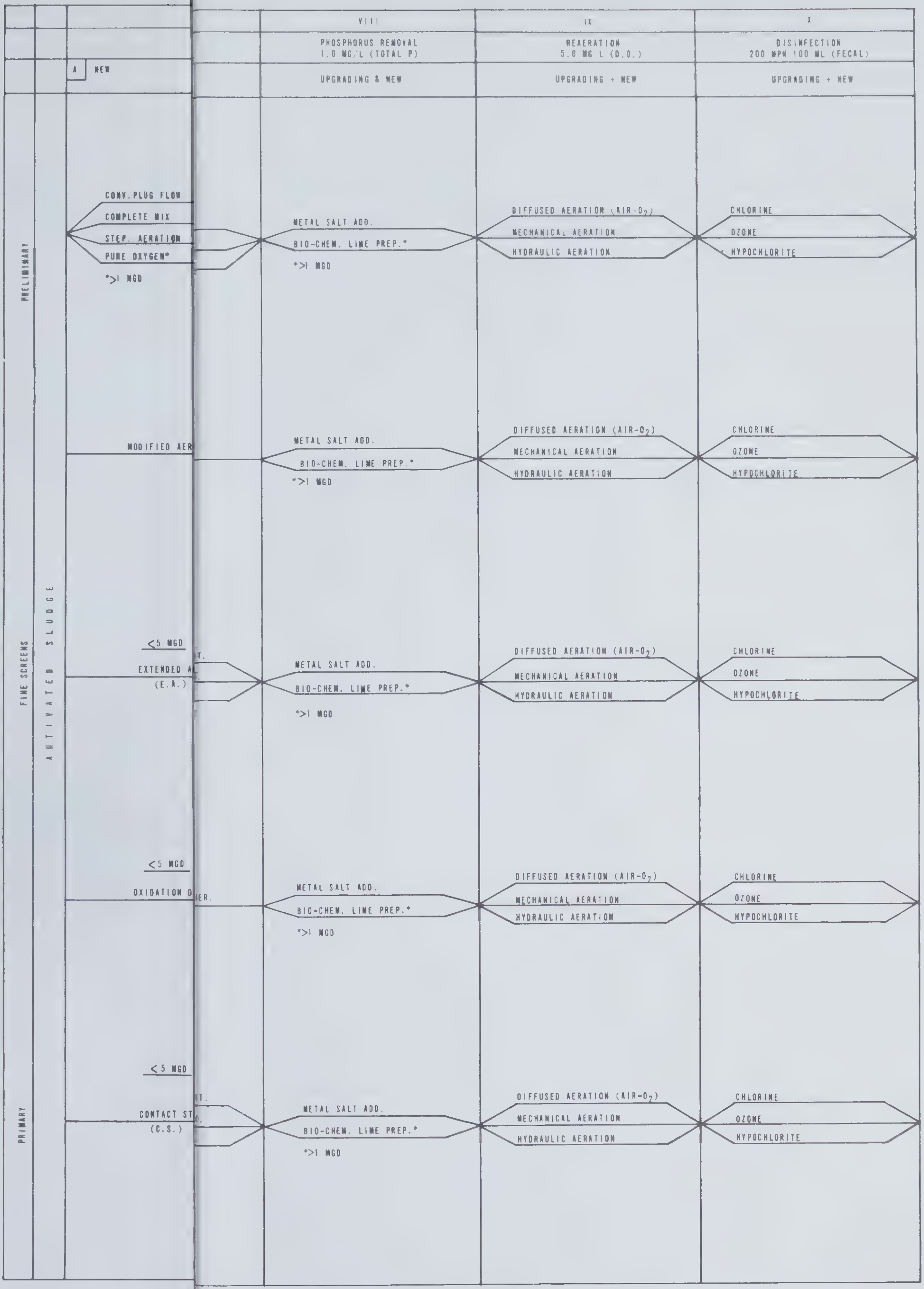

VIII
IX
X
PHOSPHORUS REMOVAL
1.0 MG/L (TOTAL P)
REAERATION
5.0 MG/L (D.O.)
DISINFECTION
200 MPN/100 ML (FECAL)
A
NEW
UPGRADING & NEW
UPGRADING + NEW
UPGRADING + NEW
PRELIMINARY
FINE SCREENS
PRIMARY
ACTIVATED SLUDGE
CONV. PLUG FLOW
COMPLETE MIX
STEP. AERATION
PURE OXYGEN*
*>1 MGD
MODIFIED AER
<5 MGD
EXTENDED A
(E.A.)
<5 MGD
OXIDATION D
ER.
<5 MGD
CONTACT ST
(C.S.)
METAL SALT ADD.
BIO-CHEM. LIME PREP.*
*>1 MGD
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE

EXHIBIT 4.11t-A
WASTEWATER TREATMENT SYSTEMS
FOR ACTIVATED SLUDGE OPTIONS

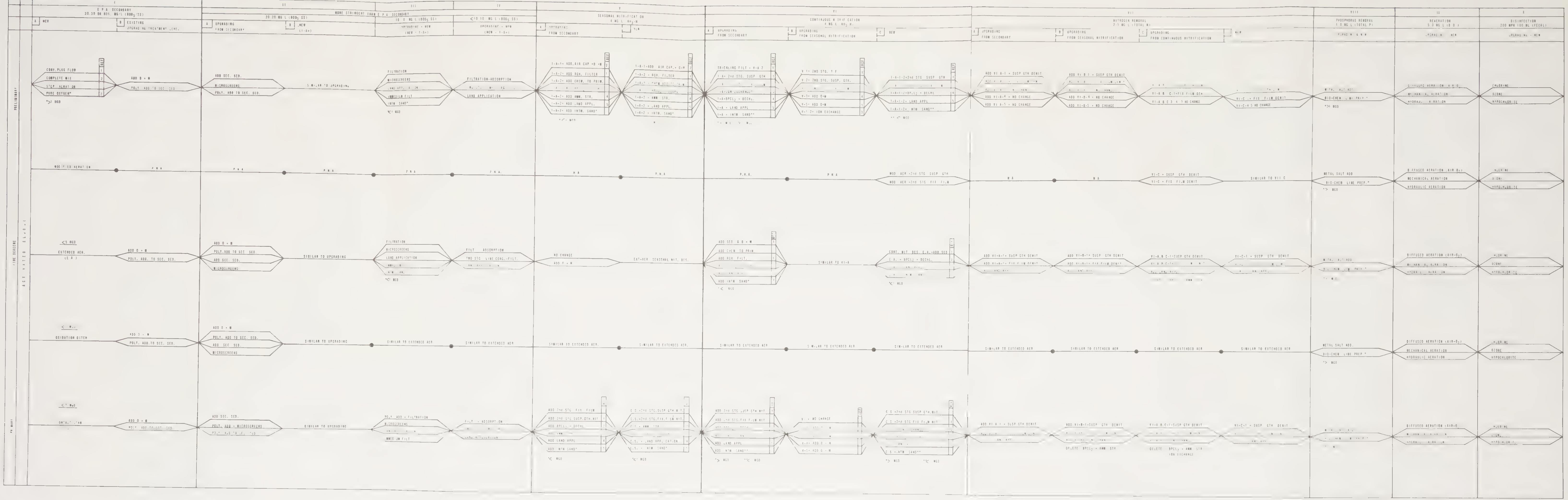

I
E.P.A. SECONDARY
30/30 OR 85%, MG/L (BOD5/SS)
A NEW
B EXISTING
UPGRADING TREATMENT LEVEL
II
20/20 MG/L (BOD5/SS)
MORE STRINGENT THAN E.P.A. SECONDARY
A UPGRADING FROM SECONDARY
B NEW (I-A+)
III
10/10 MG/L (BOD5/SS)
UPGRADING + NEW (NEW - I-A+)
IV
<10/10 MG/L (BOD5/SS)
UPGRADING + NEW (NEW - I-A+)
V
SEASONAL NITRIFICATION
4 MG/L NH3-N
A UPGRADING FROM SECONDARY
B NEW
VI
CONTINUOUS NITRIFICATION
4 MG/L NH3-N
A UPGRADING FROM SECONDARY
B UPGRADING FROM SEASONAL NITRIFICATION
C NEW
VII
NITROGEN REMOVAL
2-5 MG/L (TOTAL N)
A UPGRADING FROM SECONDARY
B UPGRADING FROM SEASONAL NITRIFICATION
C UPGRADING FROM CONTINUOUS NITRIFICATION
D NEW
VIII
PHOSPHORUS REMOVAL
1.0 MG/L (TOTAL P)
UPGRADING + NEW
IX
REAERATION
5.0 MG/L (D.O.)
UPGRADING + NEW
X
DISINFECTION
200 MPN/100 ML (FECAL)
UPGRADING + NEW
PRELIMINARY
CONV. PLUG FLOW
COMPLETE MIX
STEP AERATION
PURE OXYGEN
ADD O₂ TO AERATION
EXTENDED AER.
OXIDATION DITCH
FILTRATION
MICROSCREENS
LAND APPLICATION
FILTRATION-ADSORPTION
TRICKLING FILT.
SIMILAR TO UPGRADING
SIMILAR TO EXTENDED AER.
METAL SALT ADD.
BIO-CHEM. LIME PREP.
DIFFUSED AERATION (AIR-O₂)
MECHANICAL AERATION
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE

EXHIBIT 4.11t-A
WASTEWATER TREATMENT SYSTEMS
FOR ACTIVATED SLUDGE OPTIONS

METCALF & EDDY

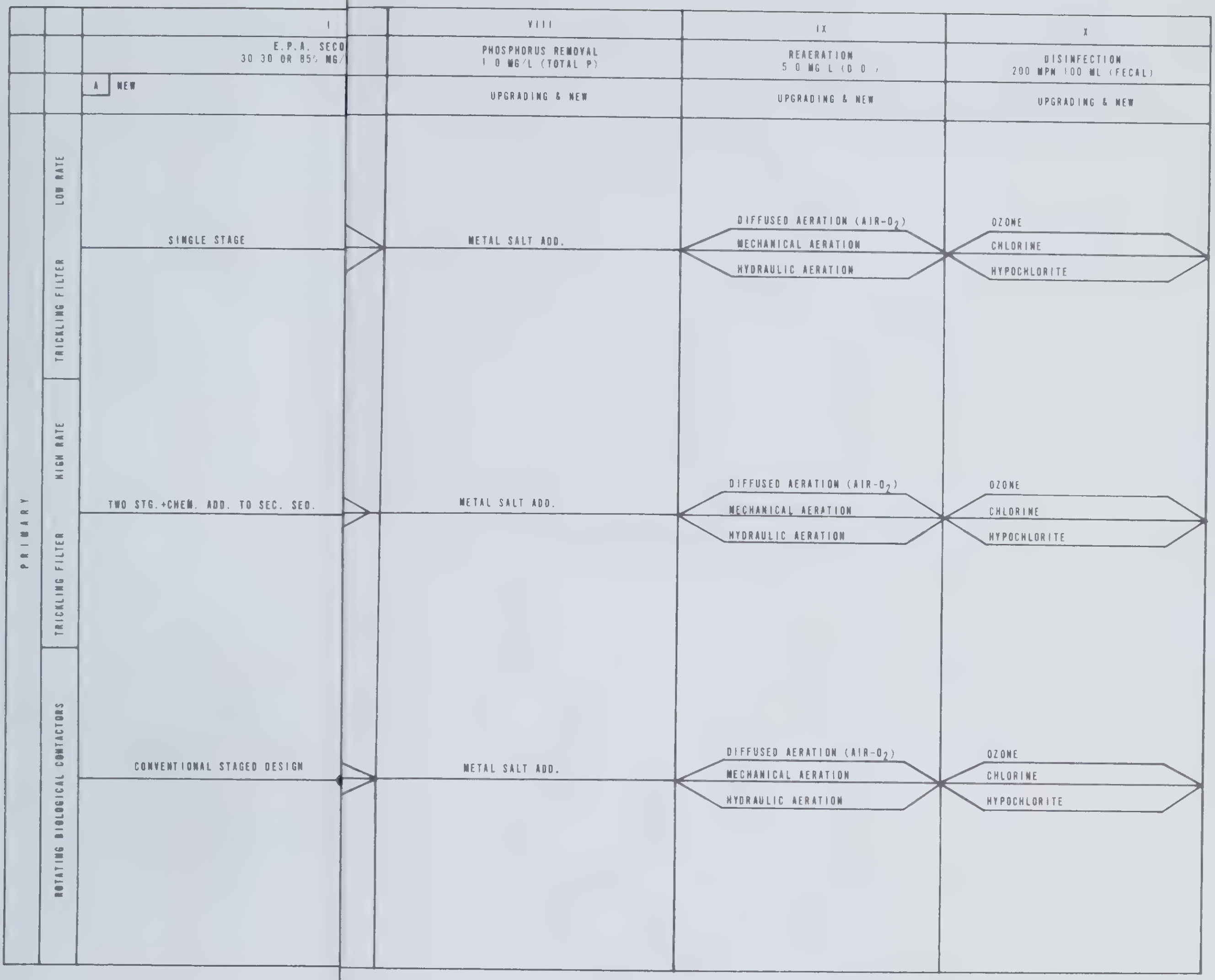

I
E.P.A. SECO
30 30 OR 85% MG/
A
NEW
VIII
PHOSPHORUS REMOVAL
1 0 MG/L (TOTAL P)
UPGRADING & NEW
IX
REAERATION
5 0 MG L (D O)
UPGRADING & NEW
X
DISINFECTION
200 MPN 100 ML (FECAL)
UPGRADING & NEW
PRIMARY
TRICKLING FILTER
LOW RATE
SINGLE STAGE
METAL SALT ADD.
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
OZONE
CHLORINE
HYPOCHLORITE
TRICKLING FILTER
HIGH RATE
TWO STG.+CHEM. ADD. TO SEC. SED.
METAL SALT ADD.
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
OZONE
CHLORINE
HYPOCHLORITE
ROTATING BIOLOGICAL CONTACTORS
CONVENTIONAL STAGED DESIGN
METAL SALT ADD.
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
OZONE
CHLORINE
HYPOCHLORITE

EXHIBIT 4.11t-B
WASTEWATER TREATMENT SYSTEMS
FOR FIXED FILM OPTIONS

METCALF & EDDY

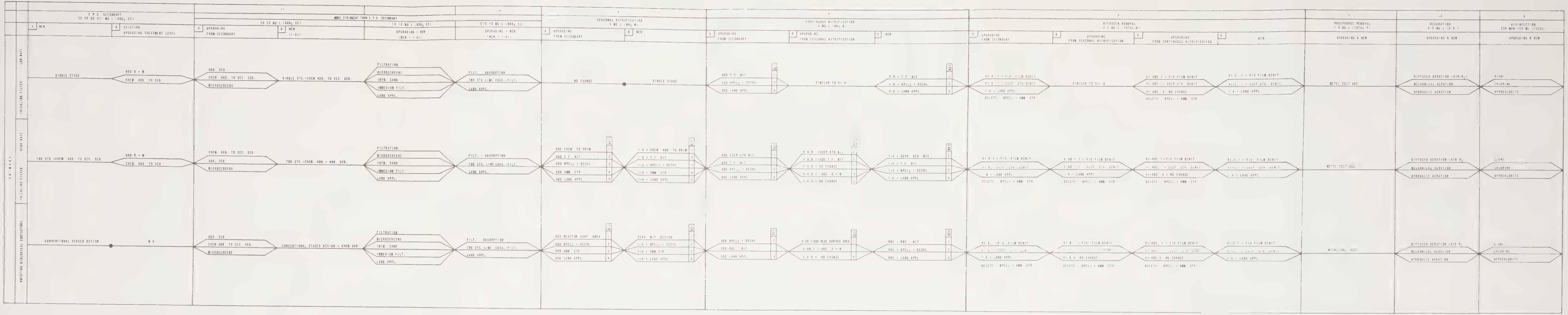

E P A SECONDARY
30 30 OR 85% MG L (BOD5 SS)
A NEW
B EXISTING
UPGRADING TREATMENT LEVEL
MORE STRINGENT THAN E P A SECONDARY
20 20 MG/L (BOD5 SS)
A UPGRADING FROM SECONDARY
B NEW (1-A+)
10 10 MG L (BOD5 SS)
UPGRADING + NEW (NEW = 1-A+)
<10 10 MG L (BOD5 SS)
UPGRADING + NEW (NEW = 1-A+)
SEASONAL NITRIFICATION
4 MG L (NH3 N)
A UPGRADING FROM SECONDARY
B NEW
CONTINUOUS NITRIFICATION
4 MG L (NH3 N)
A UPGRADING FROM SECONDARY
B UPGRADING FROM SEASONAL NITRIFICATION
C NEW
NITROGEN REMOVAL
2.5 MG L (TOTAL-N)
A UPGRADING FROM SECONDARY
B UPGRADING FROM SEASONAL NITRIFICATION
C UPGRADING FROM CONTINUOUS NITRIFICATION
D NEW
PHOSPHORUS REMOVAL
1.0 MG L (TOTAL P)
UPGRADING & NEW
REAERATION
5.0 MG L (D O)
UPGRADING & NEW
DISINFECTION
200 MPN 100 ML (FECAL)
UPGRADING & NEW
TRICKLING FILTER
LOW RATE
HIGH RATE
ROTATING BIOLOGICAL CONTACTORS
SINGLE STAGE
ADD D + M
CHEM ADD TO SED
ADD SED
CHEM ADD. TO SEC SED.
MICROSCREENS
SINGLE STG.+CHEM ADD. TO SEC. SED.
FILTRATION
MICROSCREENS
INTM SAND
IMMEDIUM FILT.
LAND APPL.
FILT. ABSORPTION
TWO STG LINE COAG.-FILT.
LAND APPL.
NO CHANGE
SINGLE STAGE
ADD T F NIT
ADD BPCL2 + DECHL
ADD LAND APPL
SIMILAR TO VI B
V-B + T F NIT
V-B + BPCL2 + DECHL
V-B + LAND APPL
DELETE BPCL2 + AMM STR
SIMILAR TO VII A
DELETE BPCL2 + AMM STR
METAL SALT ADD
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
OZONE
CHLORINE
HYPOCHLORITE
CONVENTIONAL STAGED DESIGN
CONVENTIONAL STAGED DESIGN + CHEM ADD

EXHIBIT 4.11t-B
WASTEWATER TREATMENT SYSTEMS
FOR FIXED FILM OPTIONS

METCALF & EDDY

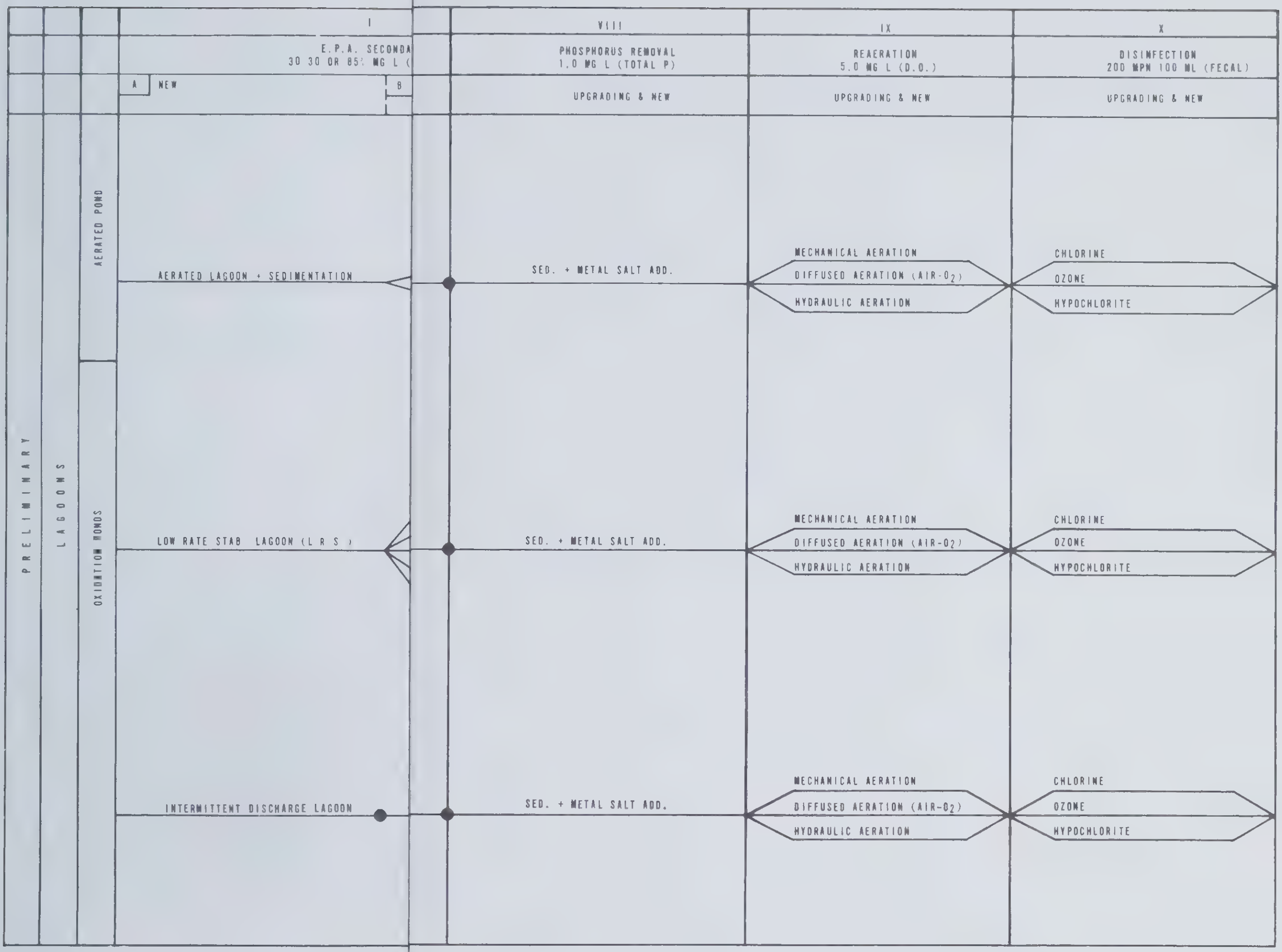

I
E.P.A. SECONDA
30 30 OR 85% MG L (
A
NEW
B
VIII
PHOSPHORUS REMOVAL
1.0 MG L (TOTAL P)
UPGRADING & NEW
IX
REAERATION
5.0 MG L (D.O.)
UPGRADING & NEW
X
DISINFECTION
200 MPN 100 ML (FECAL)
UPGRADING & NEW
PRELIMINARY
LAGOONS
AERATED POND
OXIDATION PONDS
AERATED LAGOON + SEDIMENTATION
LOW RATE STAB LAGOON (L R S)
INTERMITTENT DISCHARGE LAGOON
SED. + METAL SALT ADD.
SED. + METAL SALT ADD.
SED. + METAL SALT ADD.
MECHANICAL AERATION
DIFFUSED AERATION (AIR-O2)
HYDRAULIC AERATION
MECHANICAL AERATION
DIFFUSED AERATION (AIR-O2)
HYDRAULIC AERATION
MECHANICAL AERATION
DIFFUSED AERATION (AIR-O2)
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
CHLORINE
OZONE
HYPOCHLORITE
CHLORINE
OZONE
HYPOCHLORITE

EXHIBIT 4.11t-C
WASTEWATER TREATMENT SYSTEMS FOR LAGOON AND POND OPTIONS

METCALF & EDDY

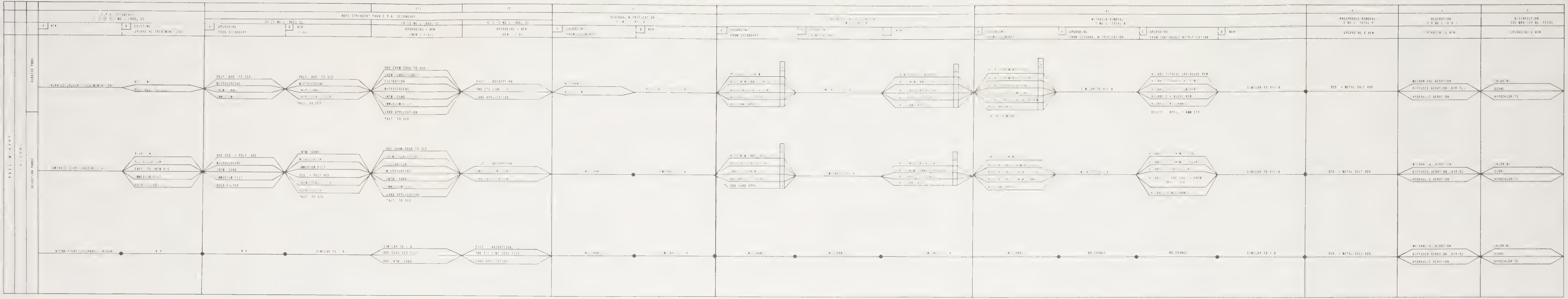
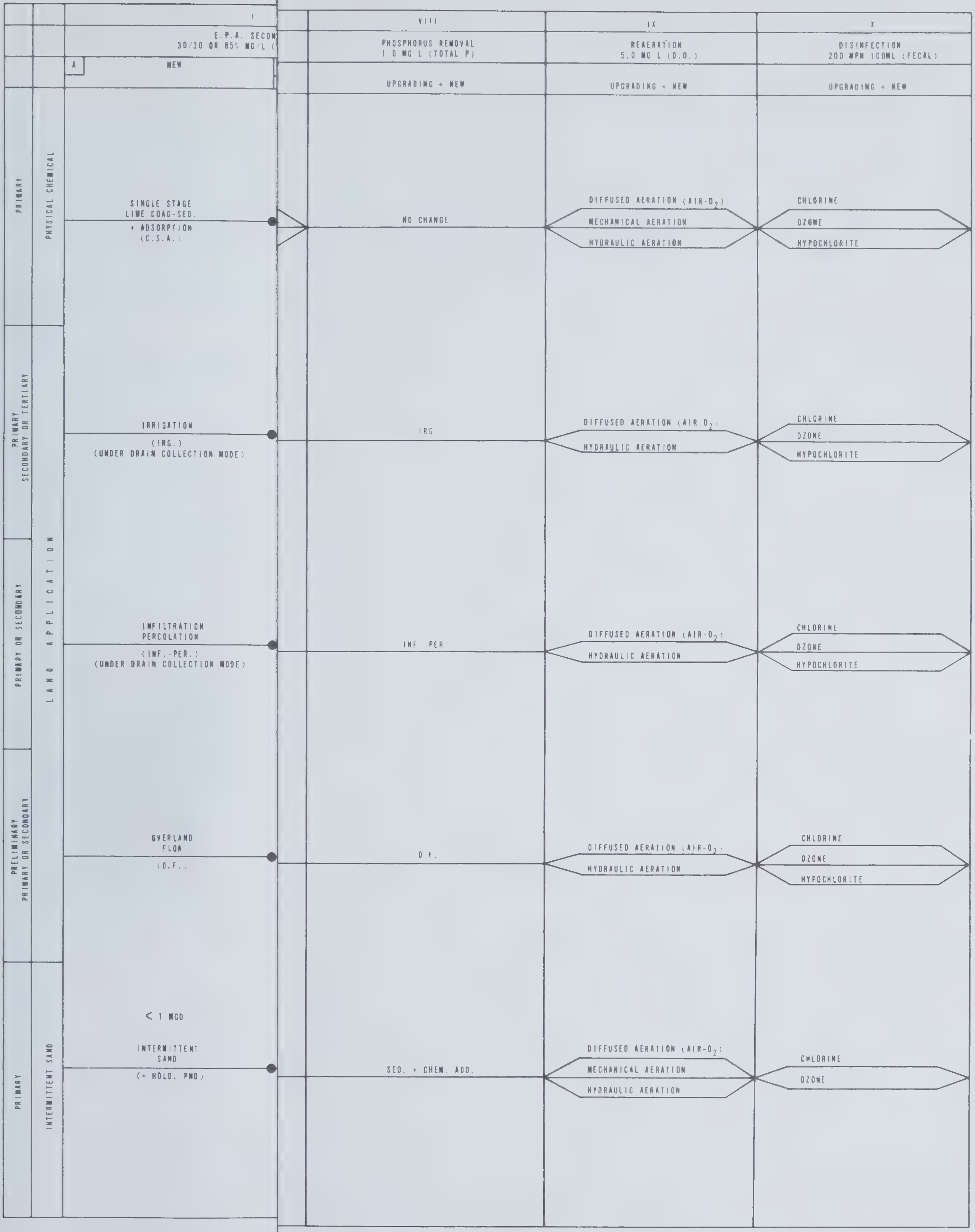

AERATED PONDS
OXIDATION PONDS
E.P.A. SECONDARY
A NEW
B EXISTING
MORE STRINGENT THAN E.P.A. SECONDARY
20/20 MG/L (BOD5 SS)
UPGRADING FROM SECONDARY
B NEW (I-A)
III
10/10 MG/L (BOD5 SS)
UPGRADING + NEW
(NEW = I-A)
IV
<10/10 MG/L (BOD5 SS)
UPGRADING + NEW
SEASONAL NITRIFICATION
B NEW
FROM SECONDARY
VI
NITROGEN REMOVAL
5 MG/L TOTAL N
B UPGRADING FROM SEASONAL NITRIFICATION
C UPGRADING FROM CONTINUOUS NITRIFICATION
D NEW
PHOSPHORUS REMOVAL
0 MG/L TOTAL P
UPGRADING & NEW
REAERATION
5.0 MG/L (D.O.)
DISINFECTION
200 MPN/100 ML FECAL
POLY. ADD. TO SED.
MICROSCREENS
*ALT. TO SED
ADD CHEM COAG TO SED
FILTRATION
INTM. SAND
LAND APPLICATION
FILT. + ADSORPTION
TWO STG LIME
ADD SED. + POLY. ADD
CNVT. TO INTM DIS
MMEDIUM FILT
ROCK FILTER
SED. + POLY ADD
INTERMITTENT
SIMILAR TO I-A
ADD COAG SED FILT
ADD INTM. SAND
TWO STG LIME COAG FILT
LAND APPLICATION
ADD LAND APPL
VI-ABC 2-FACUL LAG+ALGAE REM
VI-ABC 2 + ALGAE REM
DELETE BPCL2 + AMM STR
SIMILAR TO VII-A
SIMILAR TO I-A
NO CHANGE
SED. + METAL SALT ADD
MECHANICAL AERATION
DIFFUSED AERATION (AIR O2)
HYDRAULIC AERATION
OZONE
HYPOCHLORITE

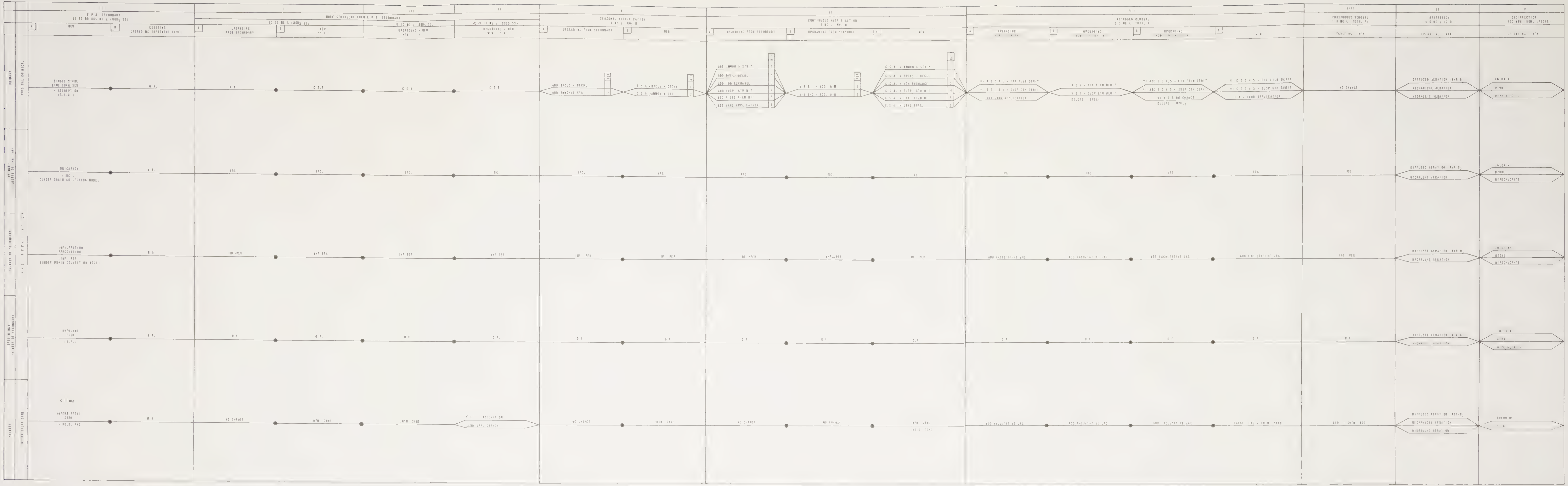
EXHIBIT 4.11t-C
WASTEWATER TREATMENT SYSTEMS
FOR LAGOON AND POND OPTIONS

METCALF & EDDY


I
E.P.A. SECON
30/30 OR 85% MG/L (
A
NEW
VIII
PHOSPHORUS REMOVAL
1.0 MG L (TOTAL P)
UPGRADING + NEW
IX
REAERATION
5.0 MG L (D.O.)
UPGRADING + NEW
X
DISINFECTION
200 MPN 100ML (FECAL)
UPGRADING + NEW
PRIMARY
PHYSICAL CHEMICAL
SINGLE STAGE
LIME COAG-SED.
+ ADSORPTION
(C.S.A.)
NO CHANGE
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
PRIMARY
SECONDARY OR TERTIARY
LAND APPLICATION
IRRIGATION
(IRG.)
(UNDER DRAIN COLLECTION MODE)
IRG
DIFFUSED AERATION (AIR O2)
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
PRIMARY OR SECONDARY
INFILTRATION
PERCOLATION
(INF.-PER.)
(UNDER DRAIN COLLECTION MODE)
INF PER
DIFFUSED AERATION (AIR-O2)
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
PRELIMINARY
PRIMARY OR SECONDARY
OVERLAND
FLOW
(O.F.)
O F.
DIFFUSED AERATION (AIR-O2)
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
PRIMARY
INTERMITTENT SAND
< 1 MGD
INTERMITTENT
SAND
(+ HOLD. PND)
SED. + CHEM. ADD.
DIFFUSED AERATION (AIR-O2)
MECHANICAL AERATION
HYDRAULIC AERATION
CHLORINE
OZONE

*PROCESS APPLICATION TO COLD WEATHER DES
BASED ON pH CONTROL CHEMICAL COST SAVIN
PRECIPITATION PROCESS.

EXHIBIT 4.11t-D
WASTEWATER TREATMENT SYSTEMS
FOR PHYSICAL-CHEMICAL AND
LAND APPLICATION OPTIONS


E.P.A. SECONDARY
30 30 OR 85% MG L (BOD5 SS)
NEW
EXISTING
UPGRADING TREATMENT LEVEL
II
III
IV
MORE STRINGENT THAN E.P.A. SECONDARY
20 20 MG L (BOD5 SS)
UPGRADING FROM SECONDARY
NEW
10 10 MG L (BOD5 SS)
UPGRADING + NEW
< 10 10 MG L BOD5 SS
UPGRADING + NEW
V
SEASONAL NITRIFICATION
4 MG L NH3 N
UPGRADING FROM SECONDARY
NEW
VI
CONTINUOUS NITRIFICATION
4 MG L NH3 N
UPGRADING FROM SECONDARY
UPGRADING FROM SEASONAL
NEW
VII
NITROGEN REMOVAL
2.5 MG L TOTAL N
UPGRADING
N.A.
VIII
PHOSPHORUS REMOVAL
1.0 MG L TOTAL P
IX
REAERATION
5.0 MG L (D.O.)
X
DISINFECTION
200 MPN 100ML (FECAL)
PRIMARY
PHYSICAL CHEMICAL
SINGLE STAGE
LIME COAG SED
+ ADSORPTION
(C.S.A.)
N.A.
C.S.A.
ADD BPCL2 + DECHL
ADD AMMONIA STR
C.S.A. + BPCL2 + DECHL
C.S.A. + AMMONIA STR
REF
ADD AMMONIA STR *
ADD BPCL2 + DECHL
ADD ION EXCHANGE
ADD SUSP. GTH NIT
ADD FIXED FILM NIT
ADD LAND APPLICATION
V-A-B + ADD. O+M
C.S.A. + AMMONIA STR *
C.S.A. + BPCL2 + DECHL
C.S.A. + ION EXCHANGE
C.S.A. + SUSP. GTH NIT
C.S.A. + FIX. FILM NIT.
C.S.A. + LAND APPL.
VI A 2 3 4 5 + FIX FILM DENIT
VI A 2 3 4 5 + SUSP GTH DENIT
ADD LAND APPLICATION
V B 2 + FIX FILM DENIT
V B 2 + SUSP GTH DENIT
DELETE BPCL2
VI ABC 2 3 4 5 + FIX FILM DENIT
VI ABC 2 3 4 5 + SUSP GTH DENIT
VI A C 6 NO CHANGE
DELETE BPCL2
VI C 2 3 4 5 + FIX FILM DENIT
VI C 2 3 4 5 + SUSP GTH DENIT
I A + LAND APPLICATION
NO CHANGE
DIFFUSED AERATION (AIR O2)
MECHANICAL AERATION
HYDRAULIC AERATION
CHLORINE
OZONE
HYPOCHLORITE
PRIMARY OR SECONDARY
IRRIGATION
(IRG)
(UNDER DRAIN COLLECTION MODE)
IRG
PRIMARY OR SECONDARY
AND APPLICATION
INFILTRATION
PERCOLATION
(INF PER)
(UNDER DRAIN COLLECTION MODE)
INF-PER
ADD FACULTATIVE LAG
PREL MINARY
PRIMARY OR SECONDARY
OVERLAND
FLOW
(O.F.)
O.F.
PRIMARY
INTERMITTENT SAND
< 1 MGD
INTERMITTENT
SAND
(+ HOLD. PND)
NO CHANGE
INTM. SAND
FILT. ADSORPTION
LAND APPLICATION
HOLD. POND
FACUL. LAG. + INTM. SAND
SED. + CHEM. ADD

*PROCESS APPLICATION TO COLD WEATHER DESIGN CONSIDERATIONS MAY BE ECONOMICAL BASED ON pH CONTROL CHEMICAL COST SAVINGS ATTRIBUTABLE TO CHEMICAL PRECIPITATION PR.

EXHIBIT 4.11t-D
WASTEWATER TREATMENT SYSTEMS
FOR PHYSICAL-CHEMICAL AND
LAND APPLICATION OPTIONS

METCALF & EDDY

4.10m shows all the segments and the receiving streams that have significant nonpoint source pollution problems. Acid mine drainage problems are confined to the Tradewater River basin, the Little Sandy River basin, Pup Creek, and Blackford Creek. Combined sewer overflows and urban runoff sources are confined to segments in and around the larger urban population centers at Ashland, Maysville, Covington, Carrolton, Louisville, Owensboro, Henderson and Paducah.

Nonpoint sources that are found to violate the water quality standards and cause water quality problems in the receiving waters are considered to be significant.

WASTEWATER CONTROL NEEDS

Wastewater treatment technologies that will meet increasingly stringent effluent standards are developed in this section. In all,ten effluent standard categories are defined, and their relationships to effluent quality objectives are discussed. Following this general discussion, the effectiveness of the various technologies in acheiving BOD_5 and suspended solids removal, ammonia nitrogen removal, nitrogen removal, and phosporus removal is considered. Possible upgrading alternatives for existing activated sludge, fixed film and lagoon wastewater treatment systems are then, presented. The section closes with brief descriptions of the unit operations and unit processes which make up the wastewater treatment technologies considered in this section.

Wastewater treatment systems are composed of unit operations in which the application of physical forces predominate, and unit processes in which removal of pollutants is accomplished primarily by biological or chemical phenomena. Combinations of unit operations and processes have historically provided an extent of treatment known as primary or secondary. Treatment requirements beyond that provided by secondary unit operations have conventionally been termed as "tertiary treatment" or "advanced waste water treatment." Since the extent of treatment inferred by these terms is arbitrary, that treatment required beyond EPA-defined secondary may be determined by establishing the contaminant removals required prior to discharge or land application. The available unit operations and unit processes may then be grouped together on the basis of compatibility and performance criteria to obtain technologically feasible categories of effluent quality.

The conventional objectives of wastewater treatment are removal of 1) biodegradable organics, 2) suspended solids, and 3) nutrients (nitrogen and phosphorus), and 4) destruction of pathogenic organisms by disinfection.

The objectives of secondary treatment have been the removal of biodegradable organics and suspended solids, and disinfection. More stringent standards have recently focused on nutrient removal for control of eutrophication and ultimate oxygen demand.

The results of an investigation concerning effluent quality requirements and available treatment technologies are shown on Exhibit 4.11t. The available treatment technologies are applied to five major wastewater treatment systems to obtain up-graded effluent standards. The five major wastewater treatment systems considered are (a) activated sludge, (b) fixed film, (c) lagoons and ponds, (d) land application, and (e) physical-chemical.

Ten effluent categories have been selected for this study. Except for EPA-defined secondary treatment, the effluent categories selected primarily represent typical effluent characteristics obtainable from alternative combinations of wastewater treatment processes (i.e. categories are based on technological break points, not on effluent quality standards).

Treatment levels have been established by the State of Kentucky River Basin Planning Group. These treatment levels with their effluent characteristics are related to the effluent categories defined for this study as follows:

Treat- ment Levels	Effluent Characteristics (mg/L)			Effluent Categories
	BOD5	NH_3-N	Do	
T1A	30	20	4	I
T1B	30	20	8	I & IX
T2A	20	15	4	II
T2B	20	15	8	II & IX
T3A	10	15	4	III
T3B	10	15	8	III & IX
T4A	10	4	4	III & VI
T4B	10	4	8	III & VI & IX
T5A	3	4	4	IV & VI
T5B	3	4	8	IV & VI & IX

The extent of unit operations and processes associated with each effluent category is primarily dependent on the basic BOD removal processes available and modifications required to meet upgraded effluent standards. The five basic types of biological removal processes are biological suspended growth, biological fixed film, lagoon options, land application, and physical-chemical treatment. The extent of treatment or number of unit processes required to meet a certain effluent category is also dependent upon the number and type of existing facilities and flow range. In certain instances, the application of alternative wastewater treatment processes has been divided into two basic design flow ranges, less than 1 mgd, and greater than 1 mgd. These design flow ranges have been selected to provide flexibility and sensitivity in projecting the application of alternative technologies.

The series arrangements in Exhibit 4.11t of effluent quality standards and related applicable treatment unit processes does not necessarily imply a continuous series addition of treatment processes to obtain any one or any combination of desired effluent quality. All treatment processes which are individually capable of meeting any given combination of desired effluent quality would supersede the application of repetitive process requirements. For example a treatment process listed in effluent category VIII may also accomplish some or all of the effluent criteria of categories I through VII.

The ten effluent categories may be combined into 6 basic objectives of wastewater treatment according to effluent quality as follows:

Effluent Categories	Effluent Quality Objectives
I,II,III,IV	Carbonaceous BOD$_5$ and SS removal
V,VI	Nitrification
VII	Nitrogen removal
VIII	Phosphorus removal
IX	Reaeration
X	Disinfection

Effluent Category I represents EPA-defined secondary treatment effluent standards and constitutes minimum treatment requirements. These effluent standards require BOD$_5$ and suspended solids effluent concentrations not to exceed 30 mg/L. Effluent Categories II,II, and IV represent increasingly stringent levels of BOD$_5$ and suspended solids removal. Effluent Category II includes all standards that permit concentrations of both BOD$_5$ and suspended solids to within a range of 20 to 30 mg/L. Effluent Categories III and IV include all standards which require both BOD$_5$ and suspended solids concentrations within a range of 10 to 20 mg/L, and less than 10 mg/L respectively. The applicability of utilizing various unit operations and processes to achieve these effluent standards is discussed later in this chapter.

Effluent Category V, seasonal nitrification to 4 mg/L NH$_3$-N, represents seasonal ammonia nitrogen oxidation to nitrite and nitrate. The 4 mg/L ammonia nitrogen value is intended to represent the limitations of the least efficient processes likely to be implemented for seasonal nitrification requirements. The process requirements incorporated within new systems will generally produce a better quality of effluent when compared to that available from process requirements applicable to upgrading existing secondary facilities.

Effluent Category VI, continuous nitrification to 4 mg/L NH$_3$-N, represents continuous oxidation of ammonia nitrogen. This category of effluent quality will generally require process additions to conventional secondary treatment.

Effluent Category VII, nitrogen removal to 2-5 mg/L total nitrogen, represents typical total nitrogen standards when such are established. Nitrogen removal to the stated effluent quality range represents two different systems applications. The lower range represents the minimum effluent concentrations currently feasible with available technologies. The upper range represents the application of ammonia removal processes - breakpoint chlorination and ammonia stripping - to biological secondary treated effluent. Nitrification must be limited in the secondary treatment carbonaceous oxidation process in order to meet the 5 mg/L total nitrogen effluent standard.

A particular note need be referenced to the fixed film nitrogen removal effluent category. Ammonia removal process additions to fixed film biological systems are not conventionally capable of obtaining the required nitrogen removal standards. The two limiting factors are the lack of control of nitrification in warm temperature conditions and the insufficient oxidation of organic nitrogen to ammonia nitrogen in cold temperature operation. Existing or sequential upgrading from secondary treatment, seasonal nitrification, and continuous nitrification are detailed in addition to new process application.

Effluent Category VIII represents phosphorus removal to 1.0 mg/L total phosphorus. The predominant process application for this effluent quality is metal salt addition to secondary or tertiary clarification processes.

Effluent Category IX, comprises reaeration to 5 mg/L DO. The selection of alternative processes available for reaeration will vary according to the type of secondary treatment process and the applicable flow range.

Effluent Category X, disinfection to 200 MPN per 100 ml. (fecal coliform) is intended to represent the EPA secondary treatment requirement.

BOD$_5$ and Suspended Solids Removal

Effluent Categories I, II, III and IV in Exhibit 4.11t are intended for the removal of BOD$_5$ and suspended solids. Effluent Category I is EPA-defined secondary treatment to achieve a concentration of 30 mg/L for both BOD$_5$ and suspended solids. Effluent Category I can normally be achieved by conventional activated sludge, fixed film, lagoons or land application processes.

Effluent Category II can normally be obtained by well operated, conservatively designed activated sludge processes. This category of effluent can also be achieved and exceeded by land application techniques following primary or secondary treatment processes.

Fixed film plants, as well as highly loaded activated sludge processes, will normally require the addition of chemicals to the secondary settling tanks and in some instances additional final settling tank capacity to achieve a concentration of 20 mg/L of both BOD$_5$ and suspended solids.

Effluent Categories III and IV, with the exception of processes using land application techniques, can only be achieved through the addition of process units to the basic treatment train (activated sludge, fixed film, physical-chemical). For these three treatment trains, the additional process units provide sequentially, as required, some form of filtration, adsorption or chemical treatment.

Physical chemical processes followed by a biological activated sludge process will also achieve both effluent categories.

Ammonia Nitrogen Removal

Effluent Categories V and VI in Exhibit 4.11t are designed for nitrification or ammonia nitrogen removal. The selection of the appropriate processes to achieve nitrification of the wastes depends to a great extent on whether or not nitrification will be required during warm weather periods or throughout the year. This is so because the basic treatment processes, such as activated sludge and fixed film, can be designed or modified to provide the degree of nitrification required during warm weather conditions. It is for this reason that Exhibit 4.11t has two categories for effluent upgrading, one seasonal and the other for continuous operation.

In a system where continuous nitrification is required, biological suspended growth, fixed film, break point chlorination and ion exchange processes are all applicable. The selection of any particular process must of necessity be job specific, taking into consideration local factors such as overall effluent requirements, local economic and site conditions, and available operational skills.

Nitrogen Removal

Effluent Category VII is designed for nitrogen removal. Nitrogen removal can be required to limit eutrophication problems, and to limit the nitrate content where the receiving waters are used as a source of water supply. Since eutrophication problems are more economically, and normally better controlled through the limitation of phosphorus as a nutrient, nitrogen removal for this purpose is not widely practiced.

The selection of any particular process for the removal of nitrogen, depends to a great extent on the degree of nitrification that can be anticipated in the preceeding process train. This is so, because such processes as ammonia stripping, break point chlorination and the ion exchange require a minimum nitrified influent if they are to operate efficiently. In other cases, the preceeding process may inherently produce an effluent of such chemical composition, that it becomes advantageous to utilize a particular process for nitrogen removal. For example, the physical-chemical process can be easily operated to produce an effluent that will have a proper pH range for the efficient operation of the ammonia stripping process.

Phosphorus Removal

Carbon is a major eutrophic nutrient which occurs in such abundance naturally that it cannot be controlled by man. Phosphorus is a key nutrient in the control of eutrophication which can in part be controlled by man. Although phosphorus sources include runoff, industrial wastes, domestic wastes and animal wastes, the most controllable source of phosphorus in aquatic systems is municipal waste.

The major aquatic systems in which phosphorus creates problems are lakes, reservoirs, impoundments and other such water bodies. In these systems the hydraulic detention periods are great enough to allow for the quiescent conditions necessary for the proliferation of nitrogen-fixing blue-green algae. Normally the creeks, streams and rivers are not quiescent and therefore generally the algae growth is not a problem.

The phosphorus concentration is a typical municipal wastewater is about 10 mg/L. It has been reported that municipal wastes may be reduced by as much as 50 percent by eliminating the use of phosphates in detergents. Reduction of phosphates to minimal levels in municipal wastes may be accomplished by the addition of metal salts (aluminum or iron) and/or lime. The cost of this type of treatment is a factor in overall operating costs of treatment facilities.

Domestic wastewaters contain nitrogen to phosphorus ratios of about 3 to 4 parts of nitrogen to 1 part of phosphorus. Since green and blue-green algae cells normally contain 12 to 15 parts of nitrogen to 1 part of phosphorus, domestic wastewaters contain an excess of phosphorus over that amount that these algae are able to use. This excess quantity can be utilized by certain nitrogen fixing algae in nitrogen deficient waters and this is one of the mechanisms through which excessive algae blooms can occur, resulting in an increase in the nitrogen budget.

All algae, both green and blue-green thrive as long as both nitrogen and phosphorus are present. If nitrogen becomes limiting, certain species of blue-green algae, namely Nostoc, Anabaena, Aphanizomenon and Gleotrichia can still continue to thrive as long as phosphorus is available. This situation develops in lakes and reservoirs but has not been known to exist in rivers, except possibly in backwater areas.

Where phosphorus is present in excess, most algae use nitrogen and phosphorus in a ratio of about 15 to 1 and will flourish up to ratios of 30 to 1. Before phosphorus can become limiting, the phosphorus level must be reduced to less than 0.5 mg/L when total nitrogen equals 15 mg/L or less than 1.0 if it equals 30 mg/L. This criteria for limiting the discharge of phosphorus is only recommended in treatment plants tributary to impoundments and where there is clear evidence of excessive eutrophication. Removal of nitrogen on the basis of controlling eutrophication does not appear warranted.

As a concrete example of corrective action, municipal waste treatment plants which discharge into impoundments may consider including the facilities necessary for the future addition of metal salts. These features can be included during the next alteration or expansion program. The addition of the metal salts may not be necessary until the monitoring program determines that a potential problem exists.

Use of Exhibit 4.11t

To illustrate the use of Exhibit 4.11t, an example of upgrading an existing wastewater treatment system for an activated sludge option is presented.

Assume that a recently built activated sludge treatment plant of the conventional plug-flow design, which is presently operating to meet EPA-defined secondary treatment, needs to be upgraded to meet more stringent effluent requirements. The recently built plant is shown on Exhibit 4.11t-A under category I-A-1, where I indicates category I, A means a new or recently built plant, and 1 means reference 1 which indicates a conventional plug flow design. To simplify the selection process for upgrading, the plant flow is assumed to be greater than 1 mgd. Assume further that the treatment plant needs to be upgraded to achieve an effluent of 10 mg/L BOD_5 and 10 mg/L SS, and is required to achieve seasonal nitrification at present and continuous nitrification in the near future. There is also a possibility that nutrient removal, and reaeration may be required. Disinfection will also be required.

The effluent requirements for BOD_5 and SS indicate that the treatment plant must meet Effluent Category III. Under Effluent Category III, there are four available alternatives to upgrade an existing plant. These are: filtration, microscreens, land application, or immedium filtration. Any of these processes may be used to meet the BOD5 and SS requirements. Intermittent sand filtration is not considered because the flow is greater than 1 mgd.

A conservatively designed conventional activated sludge treatment plant with proper operation and maintenance will normally achieve seasonal nitrification. Therefore, assuming that the plant is conservatively designed, in Effluent Category V under A - upgrading from secondary, there is only one alternative for the conventional plug-flow design -- that of adding air capacity and improving oepration and maintenance. This completes the present treatment requirements. The plant, with seasonal nitrification now appears in Exhibit 4.11t-A at V-A-2, a conventional plug-flow design with added air capacity and improved operation and maintenance. Also, an effluent polishing technique has been added to reduce the effluent BOD5 and SS each to 10 mg/L.

In the future when it becomes necessary to upgrade the treatment plant to achieve continuous nitrification, three alternatives will be available. In continuous nitrification under Effluent Category VI, under B - upgrading from seasonal nitrification, the three available alternatives following V-2 are: to add a second stage suspended growth nitrification unit, to add a second stage fixed-film nitrification unit, or to add an ion exchange unit. The plant now appears in Exhibit 4.11t-A at VI-B-1 with the addition of either nitirification unit alternatives, or at VI-B-3 with the addition of the ion exchange unit alternative.

If, in addition, nutrient removal (total nitrogen and total phosphorus) is also required, Exhibit 4.11t-A gives alternatives for obtaining these effectively. In Effluent Category VII, under C - upgrading from continuous nitrification, the alternatives are presented for total nitrogen removal. For the treatment plants at VI-B-1 with nitrification units either a suspended growth denitrification unit or a fixed-film denitrification unit could be added. If however the ion exchange unit had been chosen to achieve continuous nitrification, no further treatment would be required, since this process achieves the total nitrogen reduction as required.

If phosphorous removal is also required, effluent Category VIII presents two alternatives for phosphorus removal: metal salt addition to either primary or secondary treatment, or biological-chemical lime precipitation.

If reaeration of the effluent is required, effluent Category IX, presents three alternatives for achieving a minimum D.O. of 5 mg/l. These alternatives are: diffused aeration, mechanical aeration, or hydraulic aeration.

Effluent Category X, disinfection, presents three alternatives for meeting a fecal coliform count of 200 MPN/100 ml. These options are: an addition of chlorine, ozone, or hypochlorite.

Possible Upgrading Alternatives

Exhibit 4.11t is designed to indicate the most feasible technologies that are available to achieve any particular quality of effluent. This technology can be applied in new or upgrading situations.

Historically, many of the urban centers and small communities have provided wastewater treatment plants which incorporated the latest technology available at the time of design. In such cases, the effluent standards set by the regulatory agencies, the ease of operation, and local parameters were used in selecting the design technology. As the available technology has become more sophisticated and as the public has become more aware of the environmental impacts of wastewater pollution, the effluent standards have become more stringent. Accordingly, many of the existing wastewater treatment plants will require upgrading to meet these new standards.

Of particular interest is the technique that will be used in upgrading existing small wastewater treatment plants. This is because in the aggregate, these plants represent a large economic investment and, therefore, should have a capability of expansion and should provide some measure of flexibility and ease of operation.

In the following paragraphs various techniques that can be reasonably applied to upgrade activated sludge, fixed film and lagoon wastewater treatment systems to produce a nitrified effluent low in BOD_5 and suspended solids are presented and discussed.

Activated Sludge

Existing Activated Sludge wastewater treatment plants can be upgraded by using the following techniques:

Unit Process	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Continuous Nitirification	Add Suspended Growth	Add Fixed Film	Add Breakpoint Chlorination-Dechlorination	---
Polishing BOD_5 and Suspended Solids Removal	Multi Media Filter	Multi Media Filter	Multi Media Filter	Infiltration Percolation
Reaeration	Mechanical Aeration, Diffused Air, or Cascade	Mechanical Aeration, Diffused Air, or Cascade	Mechanical Aeration, Diffused Air, or Cascade	---
Disinfection	Chlorination	Chlorination	---	---

Under Alternative 3, the multimedia filter process should preceed the breakpoint chlorination-dechlorination process within the treatment train. This procedure will reduce the chlorine demand of the wastewater effluent. The techniques shown above usually apply to plants that have design capacities in excess of 1 mgd. With the exception of Alternative 3, all of the alternatives are adaptable to plants having capacities of less than 1 mgd. Alternative 3 is not readily used in small plants because of the complexity and difficulty of properly controlling the breakpoint chlorination-dechlorination process. The land application technique may be more advantageously and more properly applied to small plants because of the reduced land requirements. Alternative 4 is a land application technique, and as such is applicable only in those situations where the soil characteristics and groundwater hydrology will permit land disposal.

Fixed Film

Single stage high rate fixed film wastewater treatment plants can be upgraded by the following procedures:

Unit Process	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Increased BOD_5 & Suspended Solids Removal	Additional High Rate Stage	Additional High Rate Stage	Additional High Rate Stage	Additional High Rate Stage
Continuous Nitrification	Suspended Growth	Fixed Film	Breakpoint Chlorination-Dechlorination	---
Polishing BOD_5 and Suspended Solids Removal	Multi-Media Filter	Multi-Media Filter	Multi-Media Filter	Infiltration-Percolation
Aeration	Mechanical Aeration, Diffused Air, or Cascade	Mechanical Aeration, Diffused Air, or Cascade	Mechanical Aeration, Diffused Air, or Cascade	---
Disinfection	Chlorination	Chlorination	---	---

As in the case of activated sludge plants, the procedures above usually apply to plants larger than 1 mgd in capacity. For reasons previously stated, the breakpoint chlorination-dechlorination technique is usually not applicable to plants of less than 1 mgd in capacity, and the land application technique may be more reasonably adapted for smaller plants. The essence of the proposed treatment trains is providing an additional high rate stage in the fixed film process, to ensure a reduced BOD_5 load in the continuous nitrification process that follows the high rate stage. In some instances, it may be possible to design the continuous nitrification unit to properly nitrify on a year around basis the effluent from the existing single stage high rate fixed film wastewater treatment plant. In such cases, the additional high rate stage process will not be required.

Lagoons

Facultative lagoons in cold weather climates cannot consistantly produce effluents that will meet secondary treatment standards. One mode of operation that can provide a higher quality of effluent is to have sufficient capacity to store wastewater during the winter months and discharge when the wastewater is of proper quality. Since the necessary input data to permit this mode of operation can only be obtained empirically and is site specific, the system does not lend itself to general selection procedures.

Facultative lagoons are normally designed to produce algae for the purposes of oxygen production, and to convert organic and inorganic pollution loads to cellular matter. The discharge of cellular matter that has an oxygen demand can have an adverse effect on the dissolved oxygen content within the receiving stream. One method of overcoming this objection is to aerate the wastewater contents of the lagoon by mechanical means, and to filter the effluent to remove any cellular matter. With the proper choice of design parameters, such a system can produce an effluent that is well nitrified and that has a low BOD_5 and suspended solids content.

DESCRIPTION OF INDIVIDUAL PROCESSES

The unit operations and unit processes that are designated in Exhibit 4.11t are briefly described in the following paragraphs:

Preliminary Treatment

Coventional:

The main objective of preliminary treatment is the removal of coarse solids. This is usually accomplished with bar racks or screens. Comminutors are sometimes used in place of racks or screens to grind up the solids without removing them from the wastewater. Grit chambers are designed to remove grit, consisting of sand, gravel, cinders, or other heavy solid materials that have settling velocities or specific gravities substantially greater than those of the organic putrescible solids in wastewater. Skimming tanks, grease traps, preaeration, and flocculation are additional processes that may be used to make primary treatment more effective.

Fine Screen:

Fine screens, or inclined wedge-wire screens, are static gravity strainers whose function is to remove solids. Fine screens can be used in lieu of conventional preliminary treatment and in some cases for primary treatment.

Primary Treatment

Sedimentation:

Primary sedimentation is used to remove settleable and floating material from wastewater under quiescent conditions. Sludge is collected in a hopper at the bottom of the tank and scum is skimmed from the surface. Chemicals may be added to promote the precipitation of phosphorus compounds, BOD_5 and suspended solids.

Secondary Treatment - Activated Sludge

The activated sludge process uses suspended microorganisms to oxidize, in the presence of molecular oxygen, soluble and colloidal organics contained in domestic wastewaters. During the oxidation process, new cells are synthesized. Some of the synthesized cells undergo auto-oxidation in the aeration tank, the remainder forming excess sludge. Oxygen is required in the process to support the oxidation and synthesis reactions. The solids generated must be separated in a settling tank, with the largest portion returned to the aeration tank, and the excess sludge withdrawn from the system for further handling and disposal. Due to the flexibility of the process an activated sludge plant may have various modifications.

Conventional (Plugflow):

One modification is referred to as the Convetional (Plugflow) process. In this process the return sludge is mized with the incoming wastewater to the aeration tank, and the combined flow passes through the aeration tank with a minimum of mixing (Plugflow). The rate of return sludge usually varies from 15 to 75 percent of the average design flow, with an average rate of return of about 25 percent. The oxygen is normally supplied from an air source, and is dispersed in the aeration tank by mechanical or diffused air techniques.

Design of conventional activated sludge systems is generally based upon application of a volumetric loading rate and a relationship between the incoming organics and the amount of organisms in the system. The volumetric loading generally ranges between 20 and 40 lb. BOD_5/day/1000 $ft.^3$; the ratio of incoming organics to cells in the system (F/M) is generally between 0.2 and 0.4 lb. BOD_5/lb. MLSS/day. At conservative design loading rates this process will also provide seasonal nitrification of wastewater effluent.

The process has certain design and operating limits, and for this reason other modifications have been developed.

Complete-Mix:

In the complete-mix process, influent wastewaters and recycle sludge are uniformly distributed throughout the aeration tank. This flow distribution resulsts in a more uniform oxygen demand throughout the aeration tank when compared to the Conventional (Plugflow) process This permits a greater operational stability when the system is subjected to slug loads. The process can be designed to accept higher volumetric loadings than the Conventional process with little, if any, reduction in efficiency. Volumetric loadings are 30-50 lb. BOD_5/day/1000 ft.^{3}. The F/M ratio is 0.3-0.5 lb. BOD_5/lb. MLSS/day.

Step Aeration:

In a step aeration process, the influent wastewater is introduced at several points along the aeration tank. The return sludge is introduced at the head end of the tank as is the Conventional process. The process can accept higher volumetric loadings than the conventional process, without any reduction in treatment efficiency. Since the incoming flow is distributed along the length of the aeration tank, the initial oxygen demand is reduced below that experienced in the Conventional process. Volumetric loadings are 40-60 lb. BOD_5/day/1000 ft.^{3}. The F/M ratio is 0.2-0.4 lb. BOD_5/lb. MLSS/day.

Pure Oxygen:

The use of pure oxygen rather than air as a source of molecular oxygen, has the advantage of permitting the highest available volumetric loadings of any known process, with a corresponding reduction in aeration tank capacity. The system also has the advantage of maintaining a high dissolved oxygen content in the effluent, and effective odor control. Pure oxygen systems are generally enclosed and operate under a slight pressure in an oxygen rich atmosphere. Volumetric loadings are 150-225 lb. BOD_5/day/1000 ft.^{3}. The F.M ratio is 0.5-0.8 lb. BOD_5/day/1000 ft. ^{3}.

Modified Aeration:

The flow patterns for the incoming wastewaters and the returned sludge are the same as in the Conventional process. Since they are operated at substantially higher volumetric loadings, and F/M ratios, the biological activity is reduced. Aeration requirements and efficiencies are less than those of the conventional system due to this reduced biological activity. The volumetric loading is 75-150 lb. BOD_5/day/1000 ft.^{3}. The F/M ratio is 1.5-5.0 lb. BOD_5/lb. MLSS/day.

Contact Stabilization:

As in the step aeration process this modification involves a change in feed location to the aeration tank. In the process, the return sludge is returned to a reaeration tank, and the incoming wastewater is mixed with the reaerated sludge in a contact tank. Air requirements are similar to those of the conventional process. The process, similar to the step-aeration process, is capable of accepting higher volumetric loadings than the conventional process without reductions in efficiency. Volumetric loading is 40-60 lb. BOD$_5$/day/1000 ft.^{3}. The F/M ratio is 0.20-0.4 lb. BOD$_5$/lb. MLSS/day.

Extended Aeration:

The extended aeration process is a complete mix system that is designed to operate in the endogenous phase of the growth curve. This necessitates a relatively low organic loading and long aeration time. For this reason, the process is generally applicable only to small wastewater treatment plants of less than 1 mgd. capacity. Volumetric loading is 10-15 lb. BOD$_5$/day/1000 ft.^{3}. The F/M ratio is 0.03-0.10 lb. BOD$_5$/lb. MLSS/day.

Oxidation Ditch:

The oxidation ditch process is an extended aeration process that can be designed to operate on an intermittent or continuous basis. Oxygen for the process is supplied from an air source by means of a series of hydraulically operated motors. Due to the allowable loadings, the process is applicable only to small treatment plants. Volummetric loading is 10-15 lb. BOD$_5$/day/1000 ft.^{3} and the F/M ratio is 0.03-0.10 lb. BOD$_5$/lb. MLSS/day.

Secondary Treatment-Fixed Film

Trickling Filters Low Rate:

A trickling filter is a biological reactor which provides surface area upon which microorganisms can grow. Wastewater is applied intermittently to the top of a bed of coarse stone or synthetic media. While percolating through the filter, the wastewater flows over the microbial film and the soluble organics are readily metabolized and the colloidal organics adsorbed onto the surface. The wastewater is collected at the bottom of the filter in an underdrain system and conveyed to a settling tank where excess biological growth is separated from the liquid effluent.

When used for conventional secondary treatment, low-rate trickling filters are designed for hydraulic loadings of 1-4 mgd/acre, and organic loadings of 5-20 pounds of BOD$_5$/day/1000 ft.^{3}. Depending on the climate, conservate design loading rates may provide nitrification of the wastewater effluent.

Trickling Filters High Rate:

The biological process invloved is the same for the low-rate trickling filters. High-rate trickling filters used for conventional secondary treatment are designed for hydraulic loadings of 10-40 mgd/acre and organic loadings of 30-60 lb. BOD$_5$/day/1000 ft.^{3}. In contrast to the low-rate system, the recirculation of filter or clarifier effluent permits both higher and more uniform hydraulic loadings. However, the higher organican loadings do not permit nitrification to occur as readily as in low-rate systems.

Rotating Biological Contactors:

Rotating Biological Contactors (RBC's) consist of a series of closely spaced circular discs of polyvinylchloride, 40 percent submerged in a vat of wastewater, and rotated slowly through the waste. Biological growths become attached to the surface of the discs and eventually form a slime layer over the entire surface area of the discs. The rotation of the discs alternately contacts the biomass with the organic material in the wastewater and then with the atmosphere for adsorption of oxygen. The disc rotation effects oxygen transfer and maintains the biomass in an aerobic condition. The rotation is the mechanism for removing excess solids from the discs by the shearing forces it creates, and also the means of maintaing the sloughed solids in suspension so they can be carried from the unit to a clarifier. In addition to their use for secondary treatment, RBC's can also be operated to accomplish seasonal and continuous nitrification.

Secondary Treatment-Lagoon

Aerated:

An aerated lagoon is a basin in whch wastewater is treated on a flow-through basin. Oxygen is usually supplied by means of surface aerators or diffused aeration units. The action of the aerators and that of the rising air bubbles from the diffuser is used to keep the contents of the basin in suspension. In effect the essential function of this type of lagoon is waste conversion. In a completely mixed lagoon neither the incoming solids nor the biological solids produced settle out. Depending on the detention time, the effluent will contain about one-third to one-half the value of the incoming BOD$_5$ in the form of cell tissue. Before the effluent can be discharged, however, the solids must be removed by settling.

Low-Rate Stabilization:

A stabilization lagoon is a body of water contained in an earthen basin of controlled shape, which is designed for the purpose of treating wastewater. These ponds are also called oxidation ponds. Three zones exist in these ponds: (1) a surface zone where aerobic bacteria and algae exist in a symbiotic relationship, (2) an anaerobic bottom zone in which accumulated solids are actively decomposed by anaerobic bacteria, and (3) an intermediate zone that is partly aerobic and partly anaerobic, in which the decompisition of organic wastes is carried out by faculative bacteria. In these ponds, the suspended solids in the wastewater are allowed to settle to the bottom. The maintenance of the aerobic zone serves to minimize odor problems, because many of the liquid and gaseous anaerobic decomposition products, carried to the surface by mixing currents, are utilized by the aerobic organisms. Stabilization lagoons, also called facultative lagoons, have been used to provide seasonal and continuous nitrification of wastewater.

Intermittent Discharge:

Facultative lagoons are usually used and operated in series. Sufficient capacity is planned so that all the wastes can be held in the lagoon for a period of six months to one year. During the spring and/or fall period, and after the lagoon contents have stabilized, the final cell in the series arrangement is isolated from the preceding cells. This insures no subsequent short circuiting of any raw sewage for this period of time. The level of dissolved oxygen is measured n the final cell and in the stream along with the volume of flow in the stream. When all conditions are considered correct, the effluent line to the receiving water is opened and the contents of the final cell are discharged over a period of two weeks to one month. Intermittent discharge lagoons can be used to meet secondary effluent standards.

Secondary Treatment-Filtration

Intermittent Sand:

Intermittent sand filtration is a process in which wastewater is intermittently applied to a sand filter. After passing through the filter media, the effluent is collected in an underdrain system. Periodically, the filter media will become clogged with trapped particles. At this time the top surface of the filter is raked and/or replaced, and the cycle repeated. Intermittent sand filters require considerable land area and are therefore primarily used in rural areas where land is cheap. Intermittent sand filtration can also be used as apolishing process to upgrade existing wastewater treatment facilities.

Secondary Treatment-Physical-Chemical

Independent Two-Stage Lime Coagulation:

In the physical-chemical treatment process, lime is added to the raw wastewater in two stages to reduce the level of suspended organic solids and soluable phosphates. In the first stage sufficient lime is added to raise the pH over 11 to remove the phosphorus as a calcium phosphate precipitate and to form calcium carbonate as a coagulant for suspended solids removal. In the second stage gaseous carbon dioxide is added to lower the pH to approximately 10 in order to remove the excess soluble calcium as a calcium carbonate precipitate. The quantity of lime to be added is largely a function of the raw wastewater alkalinity and generally will fall in range of 300 to 400 mg/L of CaO for two-stage lime treatment. A large protion of this lime can be obtained from recovering the calcium in the sludge from the two clarifiers. The sludge is transported to a thermal regeneration facility where the calcium carbonate is decomposed to lime. The carbon dioxide from this thermal process, or another source of stack gases, can be used as the source of CO_2 in the second stage precipitation of calcium carbonate.

Polishing Techniques

Additional Secondary Sedimentation:

Secondary sedimentation is used to remove settleable and flating material from wastewater under quiescent conditions. Sludge is collected in a hopper at the bottom of the tank and scum is skimmed from the surface. Chemicals may be added to promote the precipitation of phosphorus compounds, BOD_5, and suspended solids. Design of secondary sedimentation tanks is dependent on the type of biological treatment preceding it.

Additional secondary sedimentation is sometimes added to existing facilities to meet a more stringent effluent quality. This is basically accomplished because of the additional detention time and overflow rate provided, which makes a higher recovery of suspended solids possible.

Chemical-Polymer Addition to Secondary Clarifiers:

In certain processes solids may not flocculate and settle well in the secondary clarifier. This problem may become acute in plants that are overloaded. The addition of Al or Fe salts will cause the precipitation of metallic hydroxides and/or phosphates. Al and Fe salts, along with certain organic polymers will also destabilize colloidal particles. The resultant destabilized colloids and precipitates will settle readily in the secondary clarifier, reducing the effluent suspended solids, and effecting phosphorus removal.

Microscreens:

Microscreening is a physical straining process normally used to remove suspended solids from secondary effluents for polishing purposes. The process consists of a variable speed rotating drum mounted horizontally in a tank with two compartments. The influent enters the drum from one end and flows out radially through the filtering media attached to the drum's periphery. Backwashing is accomplished at the top of the drum where pressure jets of strained effluent are sprayed onto the screen to dislodge the accumulated solids. The solids flushed from the screen can be recycled to the head of the plant or conveyed to the sludge handling system.

Multi-Media Filtration:

Filtration is used in wastewater treatment as an intermediate or final polishing step for removal of suspended solids and will produce a small reduction in BOD_5. Additional phosphorus may also be removed if the wastewater is previously treated with alum. Multi-media filter beds have been composed of various combinations of anthracite, sand, garnet, and activated carbon. The process may require precholorination to prevent buildup of biological growths on stationary components of filters. Backwash systems are required and high rate filtration may require a polymer feed system to contain breakthrough.

Immedium Filtration:

Immedium filters are primary used in wastewater treatment as an intermediate or final polishing technique. Immedium filtration is a high rate upflow filtration process by which influent wastewater enters the bottom of the filter and flows upward through the filter bed. Backwashing involves pneumatic agitation of the media followed by washing, which expands the bed about 2 percent. Raw or filtered water can be used for backwashing because the filter is washed in the same direction as the flow.

Granular Carbon Adsorption:

Activated carbon treatment of wastewater is usually used as a final polishing process. Wastewater is passed through a columnar bed of granular activated carbon where certain soluble organics are physically and chemically adsorbed in the micropore structure of the carbon. Usually, there is biological activity within the column which aids in the removal of both soluble and suspended organic material. Filtration of suspended solids can be achieved depending on the design of the carbon column. Backwashing facilities are needed and a regeneration system is required to remove the material adsorbed on the carbon.

Powdered Carbon Adsorption:

Powdered activated carbon can be added to biological treatment effluents as a polishing process. The carbon can be added directly to the secondary clarifier or to a separate contact basin. Soluble organics are removed by both adsorption and biological processes on the carbon surface. Since the carbon is very fine, a coagulant may be needed to aid in the removal of carbon particles, or filtration may be required; a regeneration process has not yet been developed for powdered carbon.

Tertiary Two-Stage Lime Coagulation Filtration:

The two-stage lime coagulation-filtration process, as previously described under secondary treatment, can also be used as a tertiary polishing technique that will appreciably reduce the BOD_5 suspended solids and phosphorus concentration.

Upgrading Lagoons

Recirculation Pumping:

Recirculation pumping to upgrade lagoons involves interpond and intrapond recirculation as opposed to mechanical mixing in the pond area. The effluents from pond cells are mixed with the influents to the cells. In intrapond recirculation, effluent from a single cell is returned to the influent to that cell. In interpond recirculation, effluent from one pond is returned and mixed with influents to another pond. Both methods return active algae cells to the feed area to provide photosynthetic oxygen to satisfy the organic load. Recirculation can affect startification in ponds, and thus gain some benefit ascribed to pond mixing. Pond recirculation is not generally as efficient as are mechanical systems in mixing facultative ponds. The major advantages of recirculation are a decrease in the organic loading and prevention of odors and anaerobic conditions in the feed zone of the ponds. Recirculation is usually accomplished with high-volume, low-head pumps.

Aeration:

Aeration is used in upgrading lagoons to supplement the pond's photosynthetic oxidation capacity in instances where the pond must treat high seasonal BOD_5 loadings, or must operate under winter conditions, or where there is little room for expansion. This supplementation is usually achieved by installing compressed air diffusers or mechanical aerators. In addition to transferring oxygen to the liquid, aeration breaks up the thermal stratification that normally develops in oxidation ponds. The mixing derived from the aeration process tends to maintain aerobic conditions deeper in the pond. Aeration systems also serve to prevent odors usually generated in overloaded ponds.

Rock Filters:

Submerged rock filters have been proposed as a method of upgrading lagoons by reducing the algae which is often present in the final effluent. The filters are constructed of rock sizes greater than 2.54 cm. and less than 12.70 cm. A biological slime layer becomes established on the filter media and as the wastewater flows through the filter horizontally, the suspended solids are adsorbed by the biological growth. During part of each year the biological slime layer will function in an anaerobic environment. Therefore, an aeration facility for the filter effluent will be required. The rate of solids accumulated in the filters is very slow making the effective life of the filter approximately 20-30 years.

Flotation-Clarification:

Flotation-clarification is a means of algae remove used in upgrading lagoons. Separation depends on the formation of fine bubbles that are physically attached to the algae causing them to float to the tank-water surface where they are collected and removed. Chemical coagulation enhances the removal. It is the algae-bubble-chemical matrix that is desired for good flotation, rather than large aggregates of chemically bound algae needed for sedimentation. No mechanical flocculation step is provided in flotation. Two modes are available for the formation of the fine bubbles: dissolved-air flotation and autoflotation. In dissolved-air flotation, a portion of the effluent or influent is pumped to a pressure tank where the liquid is agitated in contact with high-pressure air to supersaturate the liquid. When this pressurized stream is released into the influent, fine air bubbles are formed. These bubbles are then coagulated with the algae cells by the rapid addition of chemicals. The algae-chemical-bubble float is then removed at the surface of the tank. Autoflotation differs only in that no pressurization is required for the formation of the fine bubbles.

Seasonal Nitrification

Roughing Filter:

Roughing filters are fixed film biological systems in which a microorganism population develops on the wetted surfaces of the media. Roughing filters have been used ahead of conventional secondary treatment for reducing unusually high influent BOD_5 concentrations. In the seasonal nitrification application the purpose of the process is to reduce the organic load so that a downstream biological process will dependably nitrify the waste during the summer months.

Conventional Activated Sludge:

The conventional activated sludge process, as previously described under secondary treatment, can be used to provide seasonal nitrification of wastewater effluent at conservative design loading rates.

Low-Rate Trickling Filter:

A conservatively designed low-rate trickling filter process, as previously described under secondary treatment, can provide seasonal nitrification with low organic loadings.

Continuous Nitrification

Chemical Addition to Primary Treatment:

The additional BOD_5/SS removals afforded by chemical additions to primary treatment may solve overloading problems on downstream biological systems, or may allow nitrification - either seasonal or continuous, depending on the biological system designs. High pH primary effuents are amenable to NH_3 removal by ammonia stripping.

Suspended Growth:

In a controlled environment, certain microbial population will convert ammonia to nitrate in the presence of oxygen. Nitrosomonas act on dissolved ammonia to form nitrite, which in turn is converted to nitrate by Nitrobacter. This process is carried out in an activated sludge system downstream from conventional secondary treatment or primary treatment with chemical additions. The oxidation of ammonia to nitrate can be carried out with either air or pure oxygen. Because the microbial conversion causes a drop in pH, provision should be made for lime or caustic addition with low alkalinity wastewaters.

Extended Aeration Activated Sludge:

The extended aeration activated sludge process, as previously described under secondary treatment, can be used to provide seasonal or continuous nitrification of wastewater effluent at conservative design loading rates.

Oxidation Ditch Activated Sludge:

The oxidation ditch activated sludge process, as previously described under secondary treatment, can be used to provide seasonal or continuous nitrification of wastewater effluent at conservative design loading rates.

Second-Stage Trickling Filter:

Second-stage trickling filters have been utilized to obtain seasonal and continuous nitrification. Two trickling filters are operated in series with an intermediate clarifier between them. The first stage filter operates as an ordinary trickling filters and consumes most of the organic loading. When the wastewater reaches the second-stage filter the organic loading is very low and this allows autotrophic nitrifying bacteria to form on the filter media. These bacteria convert the ammonia present in the wastewater to nitrites and nitrates. The well-nitrified effluent reduces the total oxygen demand in the receiving water.

Rotating Biological Contactors:

The rotating biological contactors process, as described under secondary treatment, can also be used if properly designed to provide seasonal or continuous nitrification.

Intermittent Sand Filtration:

The intermittent sand filtration process, as previously described under secondary treatment, can be used to provide seasonal or continuous nitrification.

Facultative Lagoon:

Facultative lagoons have been used to provide seasonal and continuous nitrification of wastewater. For a description of the biological process involved, see Low-Rate Stabilization Lagoons under secondary treatment.

Nitrogen Removal

Breakpoint Chlorination:

When chloride gas is added to wastewater containing nitrogen in the ammonia form, hypochlorous acid reacts with ammonia to produce chloramines. Further addition of chlorine to the breakpoint converts the chloramines to nitrogen gas. The reactions involved are dependent on pH, temperature, contact time, and initial chlorine to ammonia rates. A pH control system is usually necessary. Air may be added to the reaction chamber to aid in mixing and to strip nitrogen trichloride, carbon dioxide, and nitrogen gases from solution. Due to toxicity, dechlorination often accompanies this process.

Ammonia Stripping:

Ammonia stripping involves the conversion of NH_4^+ ions to dissolved NH_3 gas by raising the pH of the wastewater to 10.8-11.5. The ammonia is then removed from soltuion by providing air-water contact in stripping towers or ponds.

Selective Ion Exchange:

Certain natural zeolites will selectively remove ammonia from solution. This process is carried out in columnar reactors of either the gravity or pressure flow type. When a column's removal capacity is echausted, the resin is regenerated.

Suspended Growth Dentrification:

Nitrogen in the form of nitrates can be converted to nitrogen gas by bacterial populations in the absence of oxygen. This process is carried out in a plugflow activated sludge system following any process that converts ammonia and organic nitrogen to nitrate (nitrification). The bacteria obtain energy for growth from the nitrate-nitrogen reaction, but require an external source of carbon for all synthesis, because nitrified effluents are usually low in carbonaceous matter. Methanol is commonly used as a carbon source, but nutrient poor industrial wastes have also been employed. Nitrogen gas formed in the denitrification reaction will hinder mixed liquor settling. Therefore, a nitrogen gas stripping reactor should precede the dentrification clarifier. Polishing of residual methanol-induced BOD_5 is an added benefit of the stripping tank.

Fixed Film Dentrification:

Nitrogen in the form of nitrates can be converted to nitrogen gas by bacterial populations in the absence of oxygen. This process is carried out in a columnar reactor containing stone or synthetic media size, this process may not need to be followed by a clarifier, as in the conventional trickling filter system. Adequate solids wasting occurs through the low level suspended solids carry-over in the effluent. Periodic backwashing and/or air scouring is necessary to prevent solids buildup in the column that can cause excessive head loss. As in the suspended growth dentrification system, an external carbon source is necessary; methanol is commonly used, and nutrient poor industrial wastes are potential carbon sources. Most applications of this process involve the downflow mode (either gravity or pressure), an expanded bed (upflow) technique has been tested.

Phosphorus Removal

Independent Physical-Chemical Two-Stage Lime Coagulation:

The physical-chemical two-stage lime coagulation process, as described under secondary treatment, can be used to obtain phosphorus removal from wastewater effluents.

Chemical Addition to Primary Treatment:

Chemical addition to primary treatment can be used to obtain phosphorus removal from wastewater effluents.

In the chemical addition process, ionic forms of Ca, Fe, or Al are added to raw wastewater. The Fe or Al react with the soluble orthophosphorus to produce a precipitate. When lime is used, both the Ca and OH react with the ortho-P to form an insoluble hydroxyapatite. Organic Phosphorus and Poly-phosphate are removed by more complex reactions and by sorption onto floc particules. The insoluble phosphorus, as well as considerable BOD_5 and suspended solids, are removed from the system as primary sludge. Violent mixing and flocculation are necessary upstream of the primaries. Addition of polymers may be required to aid in settling. A base is sometimes necessary in low alkalinity waters to keep the pH in the 5-7 range with mineral addition. Lime recalcination will lower chemical costs, but is a feasible alternative only for larger plants. Phosphorus removal with lime is limted to about 30 percent because the higher pH levels required for more efficient removal are inhibitory to biological systems. Therefore, recarbonation may be required if high phosphorus removals are to be accomplished in the primaries and followed by biological systems.

Metal Salt Addition to Secondary Treatment:

Metal salts are added to the raw wastewater, activated sludge aeration tank, or to the final clarifier influent channel. With trickling filter systems, the salts are added to the raw wastewater or the filter effluent. Multipoint additions have been successful. Phosphorus is removed from the liquid phase through a combination of precipitation, adsorption, exchange, and agglomeration and it is wasted with the primary and/or secondary sludges. The use of lime or ferrous salts is limited because they produce low phosphorus levels only at high pH's which are not compatible with biological treatment. Improved settling and lower effluent BOD_5 result from chemical addition, particularly if polymers are also added to the final clarifier.

Biological-Chemical:

This process utilizes both biological and chemical removal mechanisms to effect phosphorus removal with considerably reduced chemical usage than that of chemical addition methods. This process is only applicable to treatment plants that use the activated sludge form of secondary treatment.

The system consists of three major process steps; 1) Primary effluent enters the aeration tanks where biological absorption of the dissolved phosphorus in the wastewater is accomplished by the phosphorus deficient micro-organisms present; 2) The return sludge from the final clarifiers is introduced to an anaerobic stripping tank, similar to a gravity thickener, prior to recirculation to the aeration tank. Under anaerobiosis the microorganisms release the absorbed phosphorus to the supernatant and renders the return sludge to the aeration tanks devoid of phosphorus. The return sludge is then available to repeat the cycle; 3) The concentrated supernatant is treated with lime and returned to the primary clarifiers where the chemical sludge settles out with the primary sludge.

Land Disposal

Irrigation:

Irrigation is the most common land application technique and involves the application of primary or secondary effluent to the land for treatment and to aid the growth needs of plants. The wastewater is treated by physical, chemical, and biological means through interaction with the soil and plants. Effluent can be applied to crops or vegetation either by spraying or surface techniques for purposes such as avoidance of surface discharge of nutrients; economic return from use of water and nutrients to produce marketable crops; water conservation; or preservation and enlargement of greenbelts and open space.

Infiltration-Percolation

Infiltration-percolation consists of the application of effluent to the soil by spreading in basins or by spraying. Treatment occurs as the water percolates through the soil matrix. Because application rates are high, porous well-draining sand soils that function as natural filters are required. Infiltration-percolation systems can be designed for groundwater recharge; natural treatment followed by pumped withdrawal or underdrains for recovery; or natural treatment with renovated water moving vertically and laterally in the soil and recharging a surface watercourse.

Overland Flow:

In this method of land application wastewater is sprayed over the upper reaches of sloped terraces and allowed to flow across the vegetated surface to runoff collection ditches. Renovation is accomplished by physical, chemical and biological means as the wastewater flows in a thin sheet down the relatively impervious slope. It is essentially a biological treatment process with a minimum contact time between bacteria and wastewater required for adequate treatment.

Reaeration

Hydraulic:

Hydraulic aeration or cascade aeration is a post-aeration process which is used to increase the dissolved oxygen content of wastewater effluent. The plant effluent passes over a series of steps or weirs, at the base of which air is entrained and dissolved in an amount which is related primarily to the height of the fall.

Diffused Aeration:

Diffused aeration for reaeration increases the dissolved oxygen content of the effluent stream by bubbling compressed air into it through porous or nonporous media. Nonporous diffusers of the nozzle, orifice, and valve type release larger bubbles than porous diffusers. The design of the blowers is based on the static head of the liquid above the diffusers and at the distribution losses. Plugflow is desirable as it promtes efficient performance of the diffused air reaeration process. Variations from established plugflow, in some instances, could lower this efficiency.

Mechanical

Mechanical aeration for reaeration increases the dissolved oxygen content of the effluent stream by creating turbulence and constantly changing the air-water interface. The design of mechanical aerators for aeration is based on the power required to produce the needed standard oxygen transfer rate. The actual horsepower required varies with the flow characteristics assumed in the reaeration basin. Complete mixing is usually assumed as it will result in a design which assures adequate oxygen distribution. Mechanical aeration can be accomplished in chlorine contact chambers. This eliminates additional land requirements and the construction of separate reaeration tanks.

Disinfection

Chlorine:

Chlorine is perhaps the most commonly used chemical disinfectant. As it is added to the effluent, readily oxidizable substances and organic matter react with the chlorine, reducing most of it to the chloride ion. After meeting this immediate demand, the chlorine will continue to react with the ammonia to form chloramines. With continued addition of chlorine, essentially all of the chloramines will be oxidized. Continued addition of chlorine will result in a directly proportional increase in the free available chlorine.

Hypochlorite:

Hypochlorite salts have also been added to wastewater effluent for disinfection. Sodium hypochlorite and calcium hypochlorite are the most commonly used. Once the salt dissociates, the reactions that take place are the same as for disinfection with chlorine. The use of hypochlorite salts for disinfection has increased during the past few years as a result of shortages and price escalation of liquid chlorine.

Ozone:

Ozone is used in the disinfection of wastewater effluent. Ozone is applied by mixing ozonized air with the water being treated. Organic matter in water has an ozone demand that must be met before the excess becomes available for germicidal activity. Once this demand has been satisfied, bactericidal action is very rapid. The higher the concentration of ozone the more rapid the disinfection. Ozone does not persist as a residual bactericide, but rapidly breaks down in water to oxygen. Due to lack of residuals there is no certainty of completion of disinfection and there remains the possibility of potential contamination once the initial demand is met. Ozone purification also reduces odor problems.

DISPOSAL OF TREATMENT PLANT RESIDUALS

Wastewater treatment plants that provide for pollutant removals produce a significant quantity of residual material. This residual material or sludge is a semi-liquid waste which is normally processed to convert it to a suitable condition for disposal. Sludge disposal includes collection, transportation and final disposal. The purpose of this section is to set forth the quantity and characteristics of the sludge that will be produced in 1980 by those wastewater treatment plants that serve municipalities, individual public institutions and private housing developments.

The characteristics of sludge vary depending on its origin, the amount of aging that has taken place, and the type of processing to which it has been subjected. Sludge from primary sedimentation tanks is usually grey and slimy and, in most cases, has an extremely offensive odor. Sludge from chemical precepitation tanks is usually black and its odor is objectionable but not as bad as odor from primary sedimentation tanks. Waste - activated sludge generally has a brown flocculent appearance and when in good condition has an inoffensive characteristic odor. Waste - activated sludge has a tendency to become septic rapidly and then has a disagreeable odor of putrefaction. Trickling filter sludge, usually known as humus, is brownish, flocculent, and relatively inoffensive when fresh. It generally undergoes decomposition more slowly than other undigested sludges. Sludge from septic tanks is black and, unless well digested by long storage, is offensive due to the hydrogen sulphide and other gases it gives off. Digested sludge is dark brown or black and when thoroughly digested, it is not offensive.

Of the 47 municipal plants in the basin, 15 plants produce trickling filter humus, 13 produce activated sludge, 14 produce primary sludge, 4 produce lagoon sludge, and 1 produces both trickling filter humus and activated sludge. Of the 166 domestic plants in the basin, 143 produce waste activated sludge in extended aeration plants, 14 produce septic tank sludge, 3 produce digested sludge in Imhoff tanks, 2 produce conventional activated sludge and 1 produces lagoon sludge. Of the 49 industrial plants in the basin, 15 produce activated sludge from extended aeration plants, 12 produce primary sedimentation sludge, and the rest produce widely varying types of sludge. Sludge drying beds are widely used in the basin for drying digested sludge from treatment plants. The dried sludge is usually disposed of in landfill sites.

Exhibit 4.12t projects the 1980 sludge disposal needs for each counties' municipal and domestic treatment processes within the Ohio River Basin. The amount of sludge is based on the 1980 estimated sludge production from treatment plants, and assumes as a minimum that the digestion process has been used to convert it to a suitable condition for disposal. Not included in these amounts are the minor contributions from rural single-family disposal systems such as septic systems.

For the many domestic package plants and the small municipal plants the following average values of sludge production were used. Tons of wet sludge produced per million gallons of sewage is based on sewage flow of 100 gcpd and suspended solids of 0.25 lb. per capita per day.

Treatment Process	Tons/million gal. of sewage (wet)	Moisture Content, Percent
Primary sedimentation and activated sludge		
Digested	11.67	94
Digested and dewatered on sand beds	1.75	60
Digested and dewatered on vacuum filters	3.5	80
Extended Aeration		
Aerobically Digested	24	98.5
Trickling Filter		
Digested	8.6	94

For the larger municipal planta with sewage flows greater than 1 mgd, design report data was used to estimate the quantity of sludge produced. In the case of the proposed Dry Creek Regional Wastewater Plant in Northern Kentuck's Kenton County, the sludge will be heat treated, vacuum filtered and incinerated. Therefore, no estimated sludge volume was calculated for this plant.

Also, included in Exhibit 4.12t is the number of licensed disposal sites within the Ohio River Basin grouped by county. The extent of disposal site capacity, which was not available in state files, would be a factor in determining the sludge disposal methods. An alternative to disposing of sludge in landfills, may be to use it in agricultural areas as a soil conditioner.

EXHIBIT 4.12t PROJECTED SLUDGE DISPOSAL NEEDS

County	Population within Ohio River Basin (1980)	Sludge (cu.ft./day)	Number of Licensed Disposal Sites within Ohio River Basin	Capacity (cu.ft.)
Ballard	3465	2	1	--
Boone	40635	50	2	--
Boyd	39489	504	2	--
Bracken	5291	7	2	--
Breckinridge	11408	9	8	--
Caldwell	4802	1	2	--
Campbell	66300	8	5	--
Carroll	1824	1	1	--
Carter	19862	9	3	--
Christian	3303	0	0	--
Crittenden	7790	3	1	--
Daviess	36479	220	1	--
Elliott	5716	1	1	--
Gallatin	3763	0	0	--
Greenup	37632	26	4	--
Hancock	6810	5	4	--
Hardin	10422	11	0	--
Henderson	33515	178	3	--
Henry	221	0	0	--

EXHIBIT 4.12t (Continued) PROJECTED SLUDGE DISPOSAL NEEDS

County	Population within Ohio River Basin (1980)	Sludge (cu.ft./day)	Number of Licensed Disposal Sites within Ohio River Basin	Capacity (cu.ft.)
Hopkins	13654	6	4	--
Jefferson	460291	1610	6	--
Kenton	32000	0(1)	2	--
Lawrence	836	0	0	--
Lewis	11830	2	3	--
Livingston	3483	0	0	--
Mason	11066	30	3	--
McCracken	22943	178	5	--
Meade	19517	6	3	--
Oldham	15256	13	0	--
Pendleton	519	0	0	--
Rowan	234	0	0	--
Trimble	3210	2	1	--
Union	16920	34	4	--
Webster	10810	8	2	--

(1) Sludge produced at the proposed Dry Creek Regional Wastewater treatment plant is to be incinerated.

BASINWIDE MANAGEMENT PLAN

INTRODUCTION

This chapter draws on the basin-wide planning information presented in Chapter III and the discharge information presented in Chapter IV to develop a basin-wide water quality management plan. This plan is intended to identify water pollution problem areas within the basin in order of their importance and outline a schedule of target dates for abating the pollution problems in the basin. The basin-wide plan serves to coordinate and direct the allocation of resources for activities related to water quality management.

Specifically Chapter V includes the Ohio River Basin Plan for 1980 and 1995 in the form of waste load allocations by segment presented in Exhibit 5.1t and municipal construction grant priorities and compliance goals for all discharges presented in Exhibit 5.2t. Also included in Chapter V is the proposed monitoring and surveillance strategy for the basin with a listing of the proposed primary and secondary monitoring stations, a review of related planning efforts in the basin and a summary of land use policies and controls.

BASIN PLAN FOR 1980 AND 1995

This section of the basin-wide plan deals with the municipal, domestic and industrial discharges along the minor tributaries to the Ohio River including the Little Sandy River, Tygarts Creek and the Tradewater River. Discharges along the Ohio River Main Stem are discussed in Appendix F. The main tool used to analyze the effect of each point source discharge on the receiving waters was a computer model developed by Universities of Kentucky and Louisville.

Water Quality Modeling

The computer model developed by UK/UL (for a detailed explanation of the model see the Foundation Document) used the Street-Phelps formulation to model the waste assimilation process and the oxygen resources in each stream. Any stream traveling its course experiences a balance of outgoing and ingoing dissolved oxygen. On the one-hand oxygen is depleted from the stream primarily by the biochemical oxidation of organic compounds (BOD5) and ammonia-nitrogen (NH_3-N) which are discharged from point sources (nonpoint sources such as agricultural runoff and urban runoff were not modeled). Oxygen is replenished through reaeration which is essentially a physical and chemical process with atmospheric oxygen as the source.

Input to the model consists of the existing and projected characteristics of the point source discharges (i.e., BOD5, NH_3-N and dissolved oxygen concentration) and the stream characteristics which effect reaeration (i.e., slope, flow). Separate computer runs for each stream were made for the existing and projected conditions. The model output identifies the location of water quality problems and is used as a guide to allocate waste loads in each segment. Waste load allocations can be interpreted as the limit on the amount of pollutant each point source can discharge and still insure that water quality standards are met.

In order to determine the waste load allocations in water quality limited segments the computer model was run with increasing degrees of treatment until water quality standards were met. The final runs were used to establish the waste load allocations.

Waste Load Allocations

Waste load allocations are done for each water quality limited segment and are presented in Exhibit 5.1t. The allocation compares for each segment the total maximum daily load (TMDL) with the maximum theoretical daily load (MTDL), both in terms of total oxygen demand on the stream. In order to meet water quality standards the total maximum daily load (TMDL) must be less than the maximum theoretical daily load (MTDL) with the difference considered as a safety factor. The size of the safety factor would be a function of the expected nonpoint source loadings and future growth within the segment.

The maximum theoretical daily load (MTDL) represents the maximum amount of oxygen demand a segment can assimilate without the dissolved oxygen going below 5.0 mg/L. For a stream reach where the slope and flow does not vary, the MTDL is calculated as follows:

$$\mathrm{MTDL} = 17.2K_a tQ$$

where:

K_a = the reaeration rate (days^{-1}) in the reach which is a function of slope, velocity and discharge.

t = the time of travel through the reach (days).

Q = the total flow through the reach (cfs).

The MTDL for the segment is obtained by adding the value for each individual reach along the main stem of the segment. The formulation of MTDL is developed by the design and hydrology subcommittee and the details of the formulation are presented in the Foundation Document.

The total maximum daily load (TMDL) is calculated based on the revised treatment levels expected to maintain a minimum dissolved oxygen level of 5.0 mg/L and a maximum ammonia nitrogen level of 4.0 mg/L in each water quality limited segment. The revised treatment levels are listed in Exhibit 5.2t for 1980 compliance goals. The TMDL represents the daily oxygen demand upon a segment by all the point source

EXHIBIT 5.1t WASTE LOAD CHARACTERISTICS
WATER QUALITY LIMITED SEGMENTS

Segment Number	TMDL lb/day TOD	MTDL lb/day TOD	Segment Priority Number
06004	35.11	140.85	88
06007	66.90	127.22	204
06010	0.14(1)	0.15	2
06011(2)	0.37	5.42	100
06012(2)	0.86(1)	1.11	106
06013(2)	3.50	13.90	109

(1) Consists only of waste load assimilated within segment

(2) Segment also receives waste load due to non-point source

EXHIBIT 5.1t (Continued) WASTE LOAD CHARACTERISTICS WATER QUALITY LIMITED SEGMENTS

Segment Number	TMDL lb/day TOD	MTDL lb/day TOD	Segment Priority Number
08001	45.04	120.15	85
08002	6.67	14.42	21
08012	1.78	0.22	2
08015	1.15	1.67	10
08018	28.86	44.84	205
08021	252.86	1180.87	1052
08023	4.08	8.33	8
08025	9.09(1)	11.45	128
08026(2)	2.16	2.39	106
08028(2)	0	--	100
08928	0.62(1)	1.17	2
08029	62.15(1)	66.65	1876
08030	5.67	11.64	8
08035	26.69	35.02	161
08044	65.05	1455.84	42
08045(2)	165.73(1)	276.00	500
08046(2)	0	387.35	100
08047(2)	312.93	640.12	308
08048	32.20	34.50	47
08049(2)	444.27	787.33	815
08050(2)	335.32	819.86	231

(1) Consists only of waste load assimilated within segment
(2) Segment also receives waste load due to non-point source

EXHIBIT 5.1t (Continued) WASTE LOAD CHARACTERISTICS WATER QUALITY LIMITED SEGMENTS

Segment Number	TMDL lb/day TOD	MTDL lb/day TOD	Segment Priority Number
08052	119.47	201.58	432
08066	0.34	0.60	1
08068	86.03	188.32	31
08071(2)	90.30(1)	259.60	640
08080	127.56	87.76	67
08085	19.52	94.61	26
08087	0.42(1)	1.22	4
08090	13.77(1)	40.62	177
08095	0.05(1)	0.05	6
08100	0.65	0.68	1
08105	1.84(1)	2.61	9
08108	1.33	2.19	2

(1) Consists only of waste load assimilated within segment

(2) Segment also receives waste load due to non-point source

EXHIBIT 5.1t (Continued) WASTE LOAD CHARACTERISTICS
WATER QUALITY LIMITED SEGMENTS

Segment Number	TMDL lb/day TOD	MTDL lb/day TOD	Segment Priority Number
10002	54.07(1)	67.26	42
10003(2)	59.21	253.35	102
10004(2)	27.36	38.27	476
10005(2)	182.52	490.01	102
10006	15.55(1)	36.26	172
10007(2)	5.65	62.17	100
10008(2)	8.09	156.55	113
10009(2)	27.85	39.92	152
10010(2)	0.74	223.02	103
10011	8.12	8.59	6
10012(2)	40.47	86.08	203
10014(2)	0.55(1)	1.90(3)	105

(1) Consists only of waste load assimilated within segment
(2) Segment also receives waste load due to non-point source
(3) Estimated

EXHIBIT 5.1t (Continued) WASTE LOAD CHARACTERISTICS
WATER QUALITY LIMITED SEGMENTS

Segment Number	TMDL lb/day TOD	MTDL lb/day TOD	Segment Priority Number
11003	0.10(1)	0.25	1
11006	35.58	259.87	65

(1) Consists only of waste load assimilated within segment

EXHIBIT 5.2t BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs* Million $ 1980
				Flow mgd	BOD5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
14999Ab	29608214	Louisville - Morris Forman MSD	50040	90 (114.5)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=2.45, I/I=17.3 I=20.08, C=10.45 CS=560.9
6307Ab	N/A	Louisville - West County STP	5560	10 (33)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (increased capacity)	T=39.1, I/I=4.6 I=98.1, C=95.5
3442Ca	05508018 05308021	Camp Breckinridge - Morganfield STP	243.95	1.5 (1.9)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=1.29, I/I=.12, I=.47, C=.34
1444Ab	N/A	Louisville - North County STP	1946	3.5 (5.5)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (increased capacity)	T=12.2, I/I=.57, I=20.6, C=13.3
1425Ca	14508052	La Grange STP	37.40	.23 (.26)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.66, I/I=.03, I=.25, C=.18
1105Aa	16608071	Florence STP	325.26	2.0 (2.0)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (increased capacity)	T=1.22, I/I=.58, I=.53, C=2.6
997Aa	27508201	Ashland STP	9358	4.0 (4.5)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=3.8, I/I=4.74, I=1.63, C=16.42, CS=10.1
901Ca	24410004	Clay & Wheat-Croft STP	26.85	.161 (.164)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.715, I/I=.067 I=.145, C=.96
660C-	05208018	Uniontown STP	28.13	.173 (.26)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (increased capacity)	T=.67, I/I=.06, I=.07, C=.30

*T = treatment, I/I = infiltration/inflow, I = interceptors, C = collectors, CS = combined sewers

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
604Aa	32408220	Owensboro STP	4148	9.7 (12.0)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.58, I/I=1.72 I=8.8, C=11.78, CS=49.06
488Ca	01906007	Grayson STP	62.61	.385 (.485)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.99, I/I=.03, I=.16, C=1.43
445Ca	08208035	Hardinsburg STP	26.02	.16 (.30)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.83, I/I=.80, I=.03, C=.22
433Aa	12908050	Louisville-Hite Creek STP	198.16	1.6 (1.6)	10 (10)	10 (10)	4 (4)	8 (8)		Post Aeration (none)	T=.12, I/I=.40 I=1.29, C=.37
285Ca	25810012	Dawson Springs STP	37.40	.23 (.40)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (increased capacity)	T=.75, I/I=.07, I=.36, C=.51
268C-	04508008	McCracken No. 2	233.29	.333 (.50)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.94, I/I=.18, I=.29, C=1.94
	04408008	McCracken No. 1	64.56	.167 (.175)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
232Ca	24810006	Providence STP	40.03	.24 (.606)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (increased capacity)	T=1.0, I/I=.05, I=.44, C=.27
228Aa	18708080	Alexandria STP	127.56	.33 (.53)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=2.6, I=1.85, C=.10
213Ca	03308001	La Center STP	18.38	.113 (.12)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.43, I/I=.25, I=.17, C=.33
200Ca	26611006	Olive Hill STP	29.27	.180 (.24)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.9, I/I=.03, I=.21, C=.51

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD5 mg/1	SS mg/1	NH3 mg/1	DO mg/1	Other mg/1		
191 Aa	N/A	Campbell - Kenton County Sanitary Dist. No. 1 (Dry Creek) STP	12,080	19.5 (30.0)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=16.8, I/I=13.4 I=33.2, C=1.14, CS=80.2
179C-	25510009	Earlington STP	24.39	.15 (.23)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.63, I/I=.05, I=.22, C=.11
177Aa	32508222	Henderson STP	1427	2.53 (2.94)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.88, I/I=.74, I=2.2, C=8.1, CS=51.8
152Ca	08408044	Vine Grove STP	63.43	.39 (.64)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=1.3, I/I=.038, I=.19, C=.29
100C-	18808085	Brooksville STP	21.96	.135 (.160)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.44, I/I=.027, I=.054, C=.038
68Ca	23810002	Sturgis STP	139.72	.51 (.65)	15 (15)	15 (15)	4 (4)	8 (8)		Nitrification T4B	T=.93, I/I=.18, I=.3, C=.71
54Aa	16408068	Walton STP	35.78	.12 (.18)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.54, I=.05, C=2.0
51C-	03608002	Wurtland STP	28	.10 (.15)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.05, I/I=.02, C=.38
49C-	03608002	Kevil STP	6.50	.04 (.04)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.39, I/I=.03, I=.16, C=.56
47A-	N/A	Sanitary Dist. No. 1 (Greenup & Boyd)	450	.75 (.95)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=2.2, I/I=.62, I=1.85, C=4.6

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD5 mg/l	SS mg/l	NH_3 mg/l	DO mg/l	Other mg/l		
47A-	N/A	Sanitary Dist. No. 2 (Greenup & Boyd)	-	- (-)	- (-)	- (-)	- (-)	- (-)		- (-)	I=1.85, C=4.6
43Ca	00106001	Greenup STP	44.45	.115 (.189)	24 (10)	24 (10)	4 (4)	4 (8)		Nitrification (T4B)	T=.13, I/I=.022 I=.21, C=.18
37C-	04708013	Marion STP	73.58	.34 (.45)	24 (10)	24 (10)	4 (4)	8 (8)		Nitrification (T4B)	T=.27, I/I=.13, I=.15, C=.49
20B-	32608226	Paducah STP	1664	3.5 (3.9)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.42, I/I=1.18, I=1.63, C=1.46, CS=25.91
20C-	N/A	Sandy Hook STP	13.8	.05 (.075)	10 (10)	10 (10)	4 (4)	8 (8)	P (P)	T4B (none)	T=.44, I=.42, C=.47
18A-	N/A	Greenup County Environmental Commission - Pond Run (Flatwoods, Raceland, Worthington, Russell)	600	1.00 (2.2)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=2.25, I/I=.18, I=.095, C=1.6
18Ca	N/A	Augusta STP	90	.15 (.20)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.35, I/I=.06, I=.13, C=.09
14Ca	N/A	Irvington STP	N/A	.14 (.20)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	T=.8, I=.25, C=1.14
11C-	28708206	Maysville STP	516	1.30 (1.30)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=1.26, I/I=.54, I=.16, C=1.6, CS=3.0

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD$_5$ mg/1	SS mg/1	NH$_3$ mg/1	DO mg/1	Other mg/1		
10C-	30708217	Brandenburg STP	59	.165 (.24)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.54, I/I=.027, I=.10, C=.115
8Ca	31608219	Lewisport STP	42	.125 (.30)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (increased capacity)	T=.16, I/I=.05, I=.27, C=.38
8C-	30808217	Cloverport STP	69	.13 (.18)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.15, I/I=.08, I=.15, C=.51
8C-	30508216	West Point STP	72	.182 (.19)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.26, I/I=.016
5Ca	31308218	Hawesville STP	60	.14 (.21)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (increased capacity)	T=.05, I/I=.05, I=.16, C=.85
5Ca	N/A	Milton STP	54	.09 (.11)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.37, I=.16, C=.55
4Ca	14708065	Warsaw STP	0.0	0.0* (0.0)*	30 (30)	30 (30)	N/A (N/A)	4 (4)		increased capacity (None)	T=.02, I/I=.03, I=.06, C=.14
4C-	28508205	Vanceburg STP	60	.10 (.10)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.13, I/I=.09, I=.13, C=.62, CS=.62
4C-	28408204	South Shore STP	96	.16 (.24)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.06, I/I=.05, I=.16, C=1.33
3C-	N/A	Ghent STP	30	.05 (.06)	30 (30)	30 (30)	N/A (N/A)	4 (4)		EPA Secondary (none)	T=.16, I=.10, C=.48

* Intermittent discharge

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/l	SS mg/l	NH_3 mg/l	DO mg/l	Other mg/l		
	00206003	Greenbo Lake State Park	0.71	.002 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	00306004	Humble Oil Service Sta.	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	00406004	Sunoco Service Sta.	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	00606004	Cannonsburg Elem. & H.S.	2.93	.018 (.019)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	00706004	Federal Correctional Inst.	16.26	.100 (.100)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	00806004	Fairhill Estates Inc.	6.18	.016 (.017)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	00906004 01206004	Millers Little Giant Food Store and Crisp's Dairy Treat	1.93	.005 (.005)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	01306004	Hwy. Maintenance Garage	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	01406004	Smith Trailer Park	1.55	.004 (.004)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	01506005	Ashland Oil Service Sta.	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD$_5$ mg/l	SS mg/l	NH$_3$ mg/l	DO mg/l	Other mg/l		
	01606006	Cloverleaf Trailer Park	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	01706006 01806006	Humble Oil Service Sta. and Sun Oil Service Sta.	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	02206007	East Carter County H.S.	2.71	.007 (.009)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	02306008	Conley's Trailer Park	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	02406009	Graham Junior H.S.	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	02506010	Celestial Camper Court	0.81	.005 (.005)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	02606012	Hitchens Consol. School	1.14	.007 (.006)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	02806013	Elliott County Elem. School	1.46	.009 (.009)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	02906013	Lakeside Elem. School	1.55	.004 (.004)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	03208001	Fin & Feather Lodge	21.14	.130 (.131)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	03408001	Bandana Elem. School	0.65	.004 (.004)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	03508001	Ballard County H.S.	3.87	.01 (.01)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	03808005	Forrestdale School	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	04208007	Paducah Realty	1.55	.004 (.004)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	04308007	Heath Upper Elem. & H.S.	4.25	.011 (.010)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	04608012	West Ky. Youth Camp	1.78	.005 (.005)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	04808015	Buffalo Br. Trailer Pk.	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	05608023	Swope Trailer Pk.	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	05708023	Carriage Mobile Home	2.44	.015 (.018)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	05808023	Cairo Elem. School	0.49	.003 (.004)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/l	SS mg/l	NH_3 mg/l	DO mg/l	Other mg/l		
	06208025	E.H. Richmond Subd.	8.62	.053 (.065)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06308025	Woodlawn Trail. Pk.	1.46	.009 (.011)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06408025	Hillcrest Trailer Pk.	1.14	.007 (.008)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06508025	Town & Country Trailer Pk.	3.42	.021 (.026)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06608025	Lloyds Mechanical	0.81	.005 (.007)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06708025	Colony Mobile Home Village	3.42	.021 (.026)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06808025	Graham Estates Subd.	2.60	.016 (.020)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	06908025	Thruston School	1.14	.007 (.008)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	07208026	Maceo Elem. School	0.49	.003 (.004)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	07308026	Mid South Homes	1.79	.011 (.013)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	07408026	Trail-A-Way Trailer Pk.	0.81	.005 (.007)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD$_5$ mg/1	SS mg/1	NH$_3$ mg/1	DO mg/1	Other mg/1		
	07708029 07808029	Rest Haven Conv. Home and Hancock County Branch Bank	1.14	.007 (.015)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	07908030	Windwood Heights Subd.	5.53	.034 (.073)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	08308043	Doe Run San Corp.	92.77	.24 (.82)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	08508045	Forrest Hill Subd.	120.99	.313 (.344)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	08608045	Timothy Hills Subd.	40.20	.104 (.114)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	08708045	Valley Village San Corp.	84.89	.522 (.574)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	08808045	Havalock Subd.	36.34	.094 (.103)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	08908045	West Spring-field Subd.	40.20	.104 (.114)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	09208045	Ford Haven Subd.	60.69	.157 (.172)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	09308045	Villa Anna Subd.	68.03	.176 (.193)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995) Flow mgd	BOD5 mg/1	SS mg/1	NH3 mg/1	DO mg/1	Other mg/1	Treatment Needs 1980 (1995)	Costs Million $ 1980
	09408045	Valley H.S.	22.42	.056 (.064)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	09508045	Woodhaven Med. School	40.20	.104 (.114)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	09808047	Ormsby Village	20.10	.052 (.057)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	09908047	Middletown Elem. School	3.87	.01 (.011)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	10208047	Foxboro Manor Subd.	50.25	.130 (.143)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	10308047	Douglas Hills Subd.	211.83	.548 (.602)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	10408047	Village Square Shopping Ctr.	2.7	.007 (.008)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	10508047	UL School of Music	10.82	.028 (.031)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	10708047	Louisville Country Club	4.63	.013 (.015)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	10808048	Newmarket Subd.	13.50	.083 (.091)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	10908049	Holiday Inn	20.87	.054 (.059)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995) Flow mgd	BOD5 mg/1	SS mg/1	NH3 mg/1	DO mg/1	Other mg/1	Treatment Needs 1980 (1995)	Costs Million $ 1980
	11208049	Glenview Hill Subd.	10.41	.064 (.070)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	11308049	Thorn Hill Subd.	22.61	.139 (.153)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	11408049	Central State Hosp.	57.73	.355 (.390)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	11508049	Green Spring Subd.	24.35	.063 (.069)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	11608049	Murray Hill Subd.	54.32	.334 (.367)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	11708049	Barbor Mannor Subd.	20.10	.052 (.057)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	11808049	KY Childrens Home	20.10	.052 (.057)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	11908049	Westcreek Apt.	16.91	.104 (.114)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	12208049	Bancroft School	32.47	.084 (.092)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	12308049	Plantation Subd.	19.68	.121 (.132)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	12408049	Old Brownboro Place Subd.	20.10	.052 (.057)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD5 mg/1	SS mg/1	NH3 mg/1	DO mg/1	Other mg/1		
	12508049	Rolling Hills Subd.	99.37	.611 (.671)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	12608049	Spring Valley Estates	40.20	.104 (.114)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	12708050	Hunting Creek North Subd.	47.55	.123 (.135)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	12808050	Hunting Creek South Subd.	92.00	.238 (.262)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	13208050	Timberlake Subd.	3.09	.008 (.009)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	13308050	Willow Cr. Subd.	28.22	.073 (.081)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	13508050	Cross Keys Development	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	13608050	MA Stoess & Son Subd.	1.93	.005 (.006)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	13808051	Oldham County H.S.	6.57	.017 (.026)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	13908051	St. Francis School	3.48	.009 (.014)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	14208051	Texaco Service Sta.	0.39	.001 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD$_5$ mg/1	SS mg/1	NH$_3$ mg/1	DO mg/1	Other mg/1		
	14308052	Highway Maintenance Bldg.	0.39	.001 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	14408052	KY State Reformatory for Men	78.71	.484 (.691)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	14808066	Sugar Bay Rest.	0.16	.001 (.001)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	14908066	Sun Oil Service Sta.	0.16	.001 (.002)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	15208068	Big Bone Mobile Home Pk. and Big Bone Grill	4.25	.011 (.020)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	15308068	Texaco Service Sta.	0.77	.002 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	15408068	Sunoco Service Sta.	0.77	.002 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	15508068	Walton Verona H.S.	4.25	.011 (.020)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	15608068	Sun Oil Service Station	0.77	.002 (.003)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	15708068	Baker's Elmo Boone Inn	2.32	.006 (.010)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	15808068	Boron Oil Truck Plaza	4.55	.028 (.050)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	15908068	Days Inn & Hotel	3.74	.023 (.040)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	16208068	Standard Oil Service Sta.	4.25	.011 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	16308068	Big Bone Lick St. Park	7.32	.045 (.080)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	16508071	Richmond Villa Mobile Home	41.36	.107 (.162)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	16708071	KY International Raceway	10.05	.026 (.040)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	16808073	Burl Parks Subd.	13.14	.034 (.062)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	16908073	Hickory Hill Subd.	13.14	.034 (.062)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	17208073	Boone Creek Subd.	22.03	.057 (.103)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	17308076	Hebron Elem. School	0.77	.002 (.004)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	17408076	Chester Goodridge Elem. School	4.25	.011 (.021)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/l	SS mg/l	NH_3 mg/l	DO mg/l	Other mg/l		
	17508076	Greater Cincinnati Airport	26.67	.069 (.124)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	17608077	KY Jockey Club	18.55	.048 (.087)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	17808078 17908078	Gejmann Bros. Subd. and Alexandria H.S.	20.49	.053 (.064)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	18208078	Douglas Subd.	3.25	.02 (.024)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	18308078	Newport National Bank	0.16	.001 (.001)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	18408078	Schabel Motel	1.93	.005 (.006)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	18508078	St. Joseph Parish Convent	3.09	.008 (.009)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	19208087	Chatham Rest Home	0.81	.005 (.006)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	19308087	Bracken Center Apt.	0.98	.006 (.007)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	19508089	Simon Kenton Subd.	12.37	.032 (.032)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	19608089	Dr. Tenery Residence	0.19	.0005 (.0005)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	19708089	KY Dept. of Highways	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	19808089	Ashland Service Sta.	0.19	.0005 (.0005)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20208089	Washington Methodist Ch.	3.87	.001 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20308089	Maysville Community College	4.64	.012 (.012)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20408089	Maysville Vocational School	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20508089	Mason Co. H.S.	3.87	.010 (.010)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20608089	Mason Co. H.S. Bus Garage	0.19	.0005 (.0005)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20708089	Mason Co. Middle School	1.93	.005 (.005)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20808089	Mason Co. San Dist. 2	19.33	.050 (.052)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	20908089	Mason Co. San Dist. 1	11.60	.030 (.030)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	21208089	Central Center Shopping	11.60	.03 (.030)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21308090	Bon Haven Subd.	3.09	.008 (.008)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21408090	Pinewood Subd.	6.57	.017 (.017)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21608090	Mefford Hill	3.09	.008 (.008)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21708091	Tollesboro H.S.	0.39	.001 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21808091	Tollesboro Elem. Sch.	0.71	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	21908095	Garrison School	0.33	.002 (.002)	3 (3)	3 (3)	4 (4)	8 (8)		T5B (none)	
	22208100	Grays Branch Elem. Sch.	0.65	.004 (.003)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	22508105 22608105	Ashland Plaza and Greenup Mall	5.20	.032 (.023)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	22708106	Oakwood Mobile Home Trailer Park	1.16	.003 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	22808106	Green Acres Trailer Park	3.87	.01 (.012)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	22908106	Ashland Vocational Tech. School	5.03	.013 (.016)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	23308106	National Mine Service	2.71	.007 (.009)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	23408106	Ashland Oil Service Sta.	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	23508106	Humble Oil Service Sta.	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	23608106	Breezeland Swim Club	1.93	.005 (.006)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	23708108	Catletts Creek Elem. School	1.30	.008 (.011)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	23910002	Bills Truck Stop	0.77	.002 (.003)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	24210002	O'Nan Trailer Pk.	1.30	.008 (.009)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	24310003	Hudson's Restaurant & Motel	1.55	.004 (.004)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	24510004	Dixon Elem. Sch	2.32	.006 (.006)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	24910008	County Meadows Subd.	4.88	.03 (.013)	3 (3)	3 (3)	4 (4)	8 (8)		T5B (none)	
	25210008	Nebo H.S.	0.65	.004 (.002)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	25310008	W. Hopkins H.S	1.46	.009 (.004)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	2561009	Chateau Mobile Home Pk.	2.76	.017 (.014)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	25710011	Frank Young's Subd.	8.12	.021 (.023)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	25910012	4H Camp for UK	3.92	.011 (.012)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	26210014	Pennyrile State Pk	0.81	.005 (.004)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Costs Million $ 1980
				Flow mgd	BOD_5 mg/1	SS mg/1	NH_3 mg/1	DO mg/1	Other mg/1		
	26311001	Greenup Co. Voc. Sch.	2.71	.007 (.005)	24 (24)	24 (24)	4 (4)	4 (4)		None (none)	
	26411003	Sunshine Elem. Sch.	0.65	.004 (.003)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	26511005	Carter City Consolidated School	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	26711006	West Carter Co. H.S.	2.71	.007 (.007)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	26811006	Standard Oil Service Sta.	0.36	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	26911006	Lawton Elem. School	0.49	.003 (.003)	10 (10)	10 (10)	4 (4)	8 (8)		T4B (none)	
	27211006	Carter Caves State Park	0.39	.001 (.001)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	
	27311006	Upper Tygarts Jr. H.S.	0.77	.002 (.002)	24 (24)	24 (24)	4 (4)	8 (8)		Post Aeration (none)	

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Comments
				Flow mgd	BOD_5 mg/1/#/day	SS mg/1/#/day	NH_3 mg/1/#/day	DO mg/1	Other mg/1/#/day		
	23208106	Air Products & Chemicals	0.0	.067	-	-	-	8	Zn -/.5 Cr -/.2	Post Aeration	
	24710005	Alexandria Stone	0.0	.10	-	-	-	8		Post Aeration	wash water only
	07508928	American Olean Tile	1.30	.008	10/-	10/-	4/-	8		T4B	sanitary waste only
	29808214	American Synthetic Rubber Co.	700	2.0	-/338	-/549	-		COD -/5647 Oil & grease -/135		
	14608052	Anaconda Wire & Cable	0.0	.144	-	-	-	8	Cr 1.0/- Zn .5/- Cl .2/-	Post Aeration	cooling water only
	27608201	Armco Steel	1000	30.51		-/4900	-/670		cyanide-/40 phenol -/30 oil & grease -/1690 Fe -/1600 Cr -/20 Cl -/14800		
	03708005	A.E.C. Paducah 001 & 002						5	D.S. -/2000 oil & grease 10/-		
		003				-/450			Cr -/7.5 Zn -/7.5 Cu -/7.5 Cr^{+6} -/.75 oil & grease -/150		
		004 (sanitary)			10/-				fecal coliform 200 MPN/100ml		

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Comments
				Flow mgd	BOD_5 mg/1/#/day	SS mg/1/#/day	NH_3 mg/1/#/day	DO mg/1	Other mg/1/#/day		
	29708214	Borden Chemical	0.0	1.49	-	-	-				cooling water only
	28808207	C&O/B&O R.R. (Silver Grove)	23	.09	30/23	30/-	-		oil & grease 10/- phenol .25/- surfactants .35/- fecal coliform 200/100ml Cr .25/- Cu .2/-		
	28208202	C&O/C&O R.R. (Greenup)	153	.409	30/-	30/-	-		phenol .25/- oil & grease 10/- Cr .25/- Cu .2/- Surfactants .35/- fecal coliform 200/100ml		
	13708051	Clayton & Lambert Mfg. Co.	0.0	0.58	-	-	-	8	-	Post Aeration	cooling water only
	19408087	Clopay	0.0	.550	-	-	-	8		Post Aeration	cooling water only
	29208211	Dow Corning	830	.24	-/825	-/550	-	-	COD -/4250 Cu -/4.25 Cl -/60,000		
	09608046	E.I. Dupont	0.0	48.8	-	-	-	8	Cr .02/- Zn .17/-	Post Aeration	
	28308203	E.I. Dupont (Greenup)		1.62	-/100	-/200			Cr -/7 Pb -/7 COD -/432		

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995) Flow mgd	BOD$_5$ mg/1/#/day	SS mg/1/#/day	NH$_3$ mg/1/#/day	DO mg/1	Other mg/1/#/day	Treatment Needs 1980 (1995)	Comments
	03908906	Essex Wire Corp.	-	.007	24/-	24/-	4/-	4			
	32208219	Fleishman Distillery		1.43	-/48	-/48			temp. 100°F		
	28608205	Frankfort Material	N/A	.16		55/-			pH 6-9		
	31808219	Glenmore Dist.	236	.0145	-/40	-/40					
	32308219	W.R. Grace	255	2.59	-/255	-/360			COD -/2570 oil & grease -/105 phenol -/1.5 PCB's -/.1		
	31708219	Green River Steel process 001		6.075		-/60			Zn .5/- Cl .2/- oil & grease 10/- pH 6-9 Cr 1/-		
		sanitary 002			30/-	30/-			fecal coliform 200/100ml		
	04908915	Island Creek Coal Co.	0.77	.002	24/-	24/-	4/-	8		Post Aeration	
	29408212	Kawneer		.72		-/112			Al -/3.7		
	10608047	Klarar	0.0	1.02	-	-	-	4	Cr 1.0/- Zn 0.5/- Cl 0.2/-		

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Comments
				Flow mgd	BOD$_5$ mg/1/#/day	SS mg/1/#/day	NH$_3$ mg/1/#/day	DO mg/1	Other mg/1/#/day		
	00506004	Kentucky Electric steel	4.64	.012	24/-	24/-	4/-	8		Post Aeration	
	18908085	Kern's Meat Processing	0.11	.0003	24/-	24/-	4/-	8		Post Aeration	
	29308211	M & T Chemical	960	4.32	-/800	-/1200	-/160				
	27708201	Mansbach		.024							
	07608029	Martin Marietta	1073.36	6.6	10/-	10/-	4/-	8	oil & grease -/45	T4B	
	05908024	Medley Dist.	0.0	.026	-	-	-	8		Post Aeration	
	31908219	Medley Dist.		1.0	-/22	-/22					
	02706013	Mico Mfg. Co.	0.49	.003	10/-	10/-	4/-	8		T4B	sanitary only
	31408218	National Aluminum		.114		30/-			oil & grease 10/- Cr .5/- fecal coliform 200/100ml		
	29508213	Nugent Sand Co.		.025		-/11.4			pH 6-9		
	13408050	Oldham Co. Stone	8.46	.052	10/-	10/-	4/-	8		T4B	sanitary only
	30608216	Olin Chemical 001	2000	28.08	-/2000	-/2000			Cr -/10 Pb -/10 Phenol -/8		

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995)						Treatment Needs 1980 (1995)	Comments
				Flow mgd	BOD_5 mg/1/#/day	SS mg/1/#/day	NH_3 mg/1/#/day	DO mg/1	Other mg/1/#/day		
		Olin 002 (cont.)			-/400	-/165			COD -/471 phenol -/3 Cr -/1 Pb -/.3		
	19908089	Parker Tobacco Co.	5.80	.015	24/-	24/-	4/-	8		Post Aeration	
	05408021	Peabody Coal #2	3.25	.02	10/-	10/-	4/-	8		T4B	
	25410008	Pittsburg & Midway Coal Co.	1.93	.005	10/-	10/-	4/-	8		T4B	sanitary only
	09708046	Reynolds Metal 001	0.0	1.2	20/-	30/-	-	8	Al 5/- oil & grease 10/-	Post Aeration	
		002, 003, 004, 005							Cr 1/- Zn .5/- Cl .2/-		cooling waters only
	27408200	Semet Solvay		2.5			-/40		cyanide -/9 phenol -/.6 pH 6-9		
	30408215	Stauffer Chemical	230	.43					COD -/154 Cr -/2.6 oil & grease -/51 Phenol -/2.6 CCl_4 -/10 pH 6-9		

EXHIBIT 5.2t (Continued) BASIN-WIDE NEEDS FOR 1980 and 1995

Discharge Priority	Code Number	Facility	Non-Conservative Waste Load Allocation lb./day TOD	Compliance Goals 1980 (1995) Flow mgd	BOD_5 mg/1/#/day	SS mg/1/#/day	NH_3 mg/1/#/day	DO mg/1	Other mg/1/#/day	Treatment Needs 1980 (1995)	Comments
	21508090	Ward Mfg.	67.17	.413	10/-	10/-	4/-	8		T4B	
	31208218	Wescor	2210	2.8	-/2210	-/3400					
	30908217	Western Kraft	3850	5.86	-/3850	-/3500			fecal coliform 1000/100 ml		

discharges. For each discharge the total pounds of oxygen demand daily is calculated as follows (See Exhibit 5.2t):

$$TMDL = 8.34Q\ (1.5\ BOD_5 + 4.5\ NH_3\text{-}N)$$

where:

Q = flow in mgd from the discharge.

$1.5\ BOD_5$ = total carbonaceous oxygen demand in mg/L.

$4.5\ NH_3\text{-}N$ = total nitrogenous oxygen demand in mg/L.

Individual discharge values are added in each segment to obtain the TMDL for the segment. It is important at this point to account for the fact that the total oxygen demand from all the discharges within one segment may not all be exerted within the segment. That is, the flow may carry a substantial part of the oxygen demand downstream to another segment. In such cases, the TMDL for the upstream segment should only reflect that part of the total load assimilated within the segment and the downstream segment should account for the remaining oxygen load in its TMDL.

As can be expected the TMDL is sensitive to changes in the segments such as relocating discharges, regionalization of discharges, new discharges and intermittent discharges. For this reason, Exhibit 5.1t should be updated as the number and quantity of waste loads discharged in a segment change.

Basin-Wide Needs for 1980 And 1995

The basin-wide needs are developed for each significant discharge based on the water quality modeling and the existing NPDES permits and are summarized in Exhibit 5.2t. The discharges are divided into three categories: Municipal, Domestic and Industrial. Cost estimates for future needs are prepared for the municipal discharges only. Each municipal discharge is also given a priority number.

Costs developed in this plan are approximate and serve to identify an order-of-magnitude cost for state-wide needs. The municipal priority is calculated based on the intent of spending money first where it is needed most so municipalities with high priorities will be the first to receive construction funds for treatment facilities and related needs. The treatment needs column in Exhibit 5.2t refers to treatment levels T1A through T5B for BOD_5, NH_3-N and DO and corresponds to those presented in Chapter IV under Wastewater Control Needs.

Suspended solids removal are assumed to equal BOD5 removals. Other pollutants such as heavy metals, phosphorus, etc., were evaluated on a case by case basis using NPDES permit limitations when available.

Three priority ranks: high (segment priority greater than 1000), medium (segment priority between 200 and 1000), and low (segment priority less than 200) have been selected by the division of Water (Quality) for use with each segment in the State of Kentucky. Exhibit 5.3m shows the state-wide priority ranking and Exhibit 5.3t lists all segments with their numerical priority, rank among the segments, and its state-wide priority ranking for all the segments in the Ohio River Basin. Exhibit 5.3t serves as a supplement to the Exhibit 5.3m.

Municipal Discharges:

Most of the municipal discharges on the tributaries to the Ohio River are less than 1 mgd in size and discharge to streams with a 7-day, 10-year low flow of zero. In these cases where there is no benefit of dilution from stream waters the treatment level required to meet water quality standards, regardless of wastewater flow, is T4B (10 mg/L BOD_5, 4 mg/L NH_3-N and 8 mg/L DO). Since most of these plants have at present secondary treatment, compliance with these standards year round will require one of the following general alternatives:

1. Add treatment processes for further BOD_5 reduction, year round nitrification and aeration of effluent.
2. Land application of the secondary effluent.
3. Storage of the secondary effluent during periods of low flow.
4. Relocating the discharge.

For the purpose of estimating costs for 1980 needs it was assumed that all the plants followed alternative one since these costs were used as part of the criteria in establishing the municipal construction grant priorities and a common base was needed to make comparisons.

Municipal discharges are given detailed attention insofar as they are ranked by priority for construction grants and cost estimates are developed for their 1980 needs.

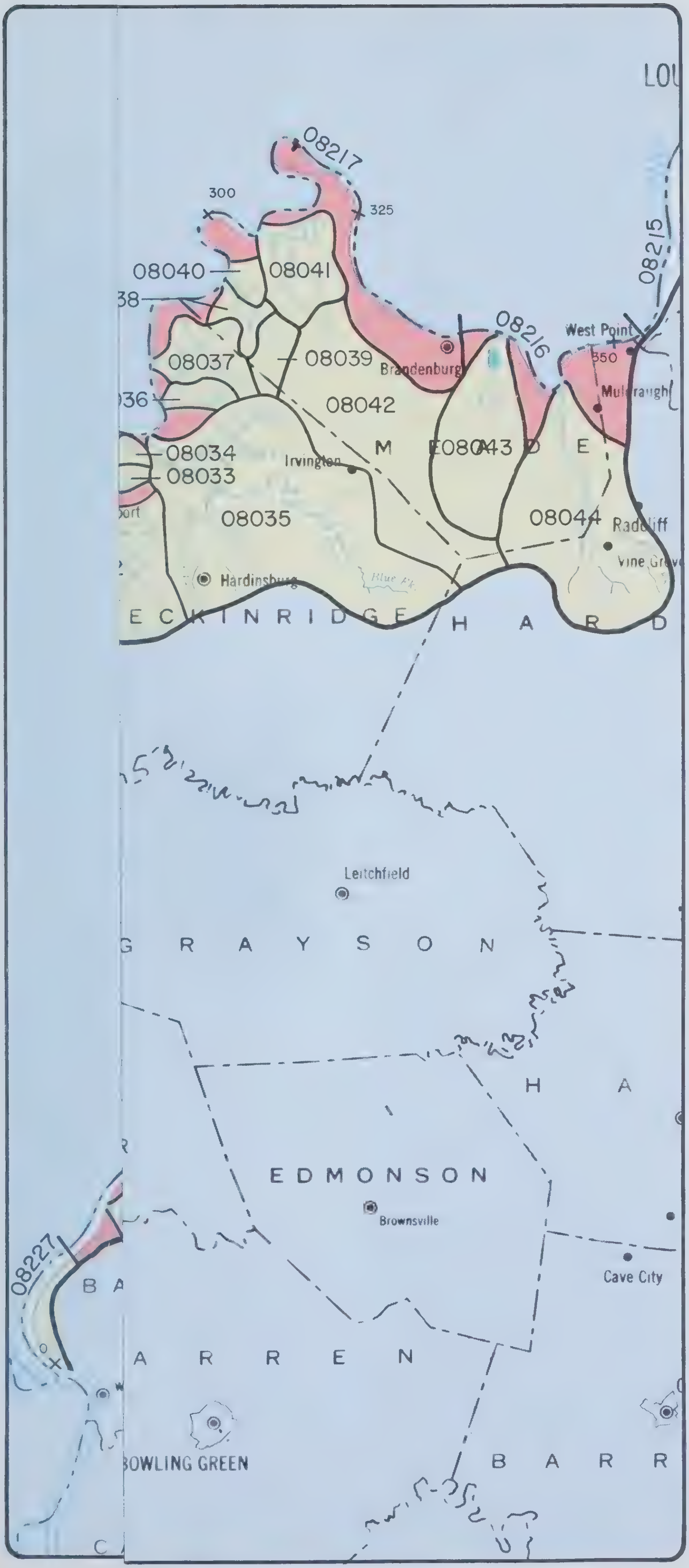
Municipal Priorities:

All the municipalities are ranked by a number-letter designation which indicates the priority in which construction grant money is to be distributed throughout the river basin. This priority system has been developed by the State Department of Natural Resources and Environmental Protection and is described as follows.

In order to arrive at the numerical part of the priority the following procedure is pursued. Cost information for 1980 needs are computed for the following categories:

1. Treatment plant expansion and upgrading.
2. Infiltration-Inflow studies.
3. Collection system improvement and expansion.
4. Interceptor construction.
5. Combined sewer pollution abatement.

The total cost is computed and each category is weighted based on the percentage of the total cost. Next, for each category, the percent of total cost is multiplied by one of the following factors:


LOU
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300
325
08040
08041
38
08037
08039
Brandenburg
08216
West Point
350
Muldraugh
08215
36
08042
08034
08033
Irvington
M
E080
43
D
E
port
08035
08044
Radcliff
Vine Grov
Hardinsburg
Blue Fk.
ECKINRIDGE
H A R D
Leitchfield
G R A Y S O N
H A
R
EDMONSON
Brownsville
Cave City
08227
B A
0
A R R E N
BOWLING GREEN
B A R R
C

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 5.3m-1

BASINWIDE MANAGEMENT PLAN

LEGEND

— - — - —	COUNTY OUTLINES
〰	STREAMS
━━━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

STATEWIDE PRIORITY RANKING

🟨	LOW PRIORITY
🟥	MEDIUM PRIORITY
🟥	HIGH PRIORITY

5 0 10 20

GRAPHIC SCALE IN MILES

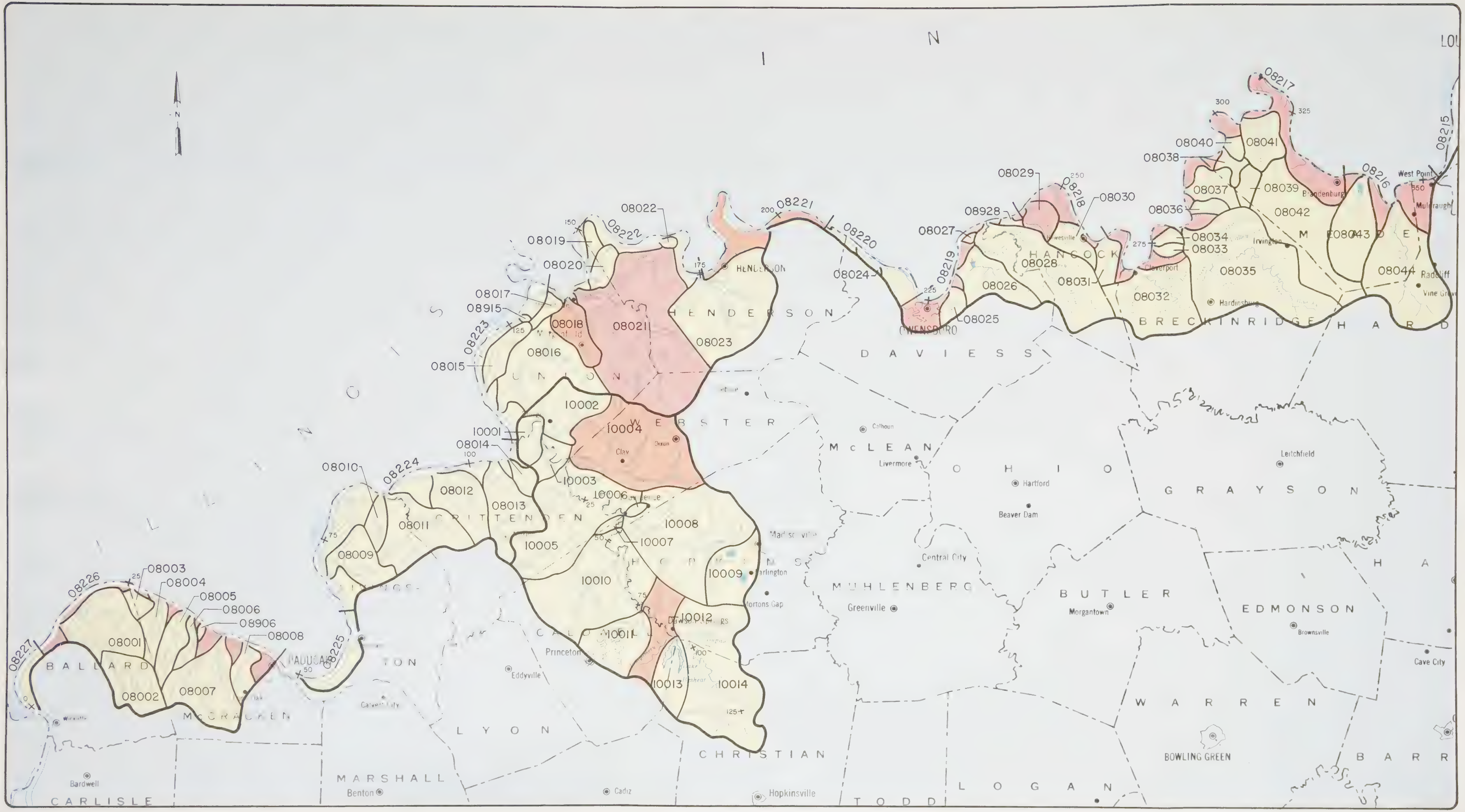
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago


N
I N D I A N A
I L L I N O I S
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300
325
08041
08040
08038
08215
08216
West Point
350
Muldraugh
08029
250
08218
08030
08037
08039
Brandenburg
08036
08042
08928
08027
M E A D E
08043
08022
150
08222
08019
200
08221
08220
Hawesville
H A N C O C K
275
08034
08033
Irvington
08020
175
HENDERSON
08024
08219
08028
Cloverport
08035
08044
Radcliff
Vine Grove
08017
08915
225
08026
08031
08032
Hardinsburg
08018
Morganfield
08021
H E N D E R S O N
08023
OWENSBORO
08025
B R E C K I N R I D G E
H A R D
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D A V I E S S
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W E B S T E R
Calhoun
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08014
100
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Dixon
Clay
M c L E A N
Livermore
O H I O
Hartford
Beaver Dam
Leitchfield
G R A Y S O N
08010
08224
10003
08012
08013
C R I T T E N D E N
10006
Providence
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08011
10008
Madisonville
75
08009
10005
50
10007
H O P K I N S
10009
Earlington
Central City
M U H L E N B E R G
B U T L E R
Morgantown
E D M O N S O N
Brownsville
H A
08226
25
08003
08004
08005
08006
08906
08008
L I V I N G S T O N
10010
Mortons Gap
Greenville
08001
08227
B A L L A R D
PADUCAH
08225
50
C A L D W E L L
Princeton
10011
75
10012
Dawson Springs
Eddyville
Cave City
08002
08007
M c C R A C K E N
0
Wickliffe
Calvert City
10013
100
10014
125
W A R R E N
L Y O N
BOWLING GREEN
B A R R
Bardwell
C A R L I S L E
M A R S H A L L
Benton
Cadiz
C H R I S T I A N
Hopkinsville
T O D D
L O G A N

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 5.3m-1

BASINWIDE MANAGEMENT PLAN

LEGEND

– · – · –	COUNTY OUTLINES
〜	STREAMS
━━	BASIN OUTLINE
+ 25	RIVER MILES
08032	SEGMENT NUMBERS
——	SEGMENT BOUNDARIES

STATEWIDE PRIORITY RANKING

🟨	LOW PRIORITY
🟧	MEDIUM PRIORITY
🟥	HIGH PRIORITY

5 0 10 20

GRAPHIC SCALE IN MILES

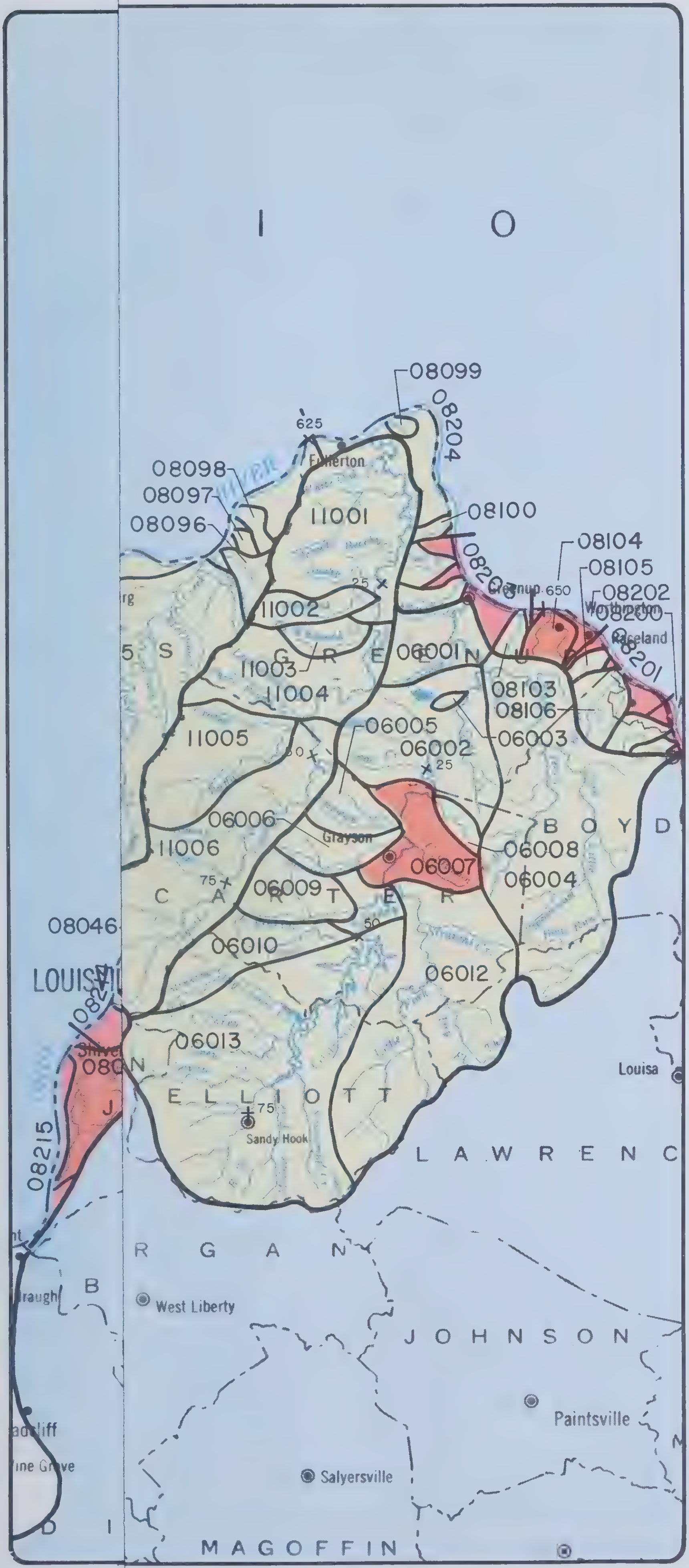
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 5.3m-2

BASINWIDE MANAGEMENT PLAN

LEGEND

— · — · —	COUNTY OUTLINES
~~	STREAMS
▬▬▬	BASIN OUTLINE
+ 25	RIVER MILES
08088	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES

STATEWIDE PRIORITY RANKING

🟨	LOW PRIORITY
🟧	MEDIUM PRIORITY
🟥	HIGH PRIORITY

5 0 10 20

GRAPHIC SCALE IN MILES

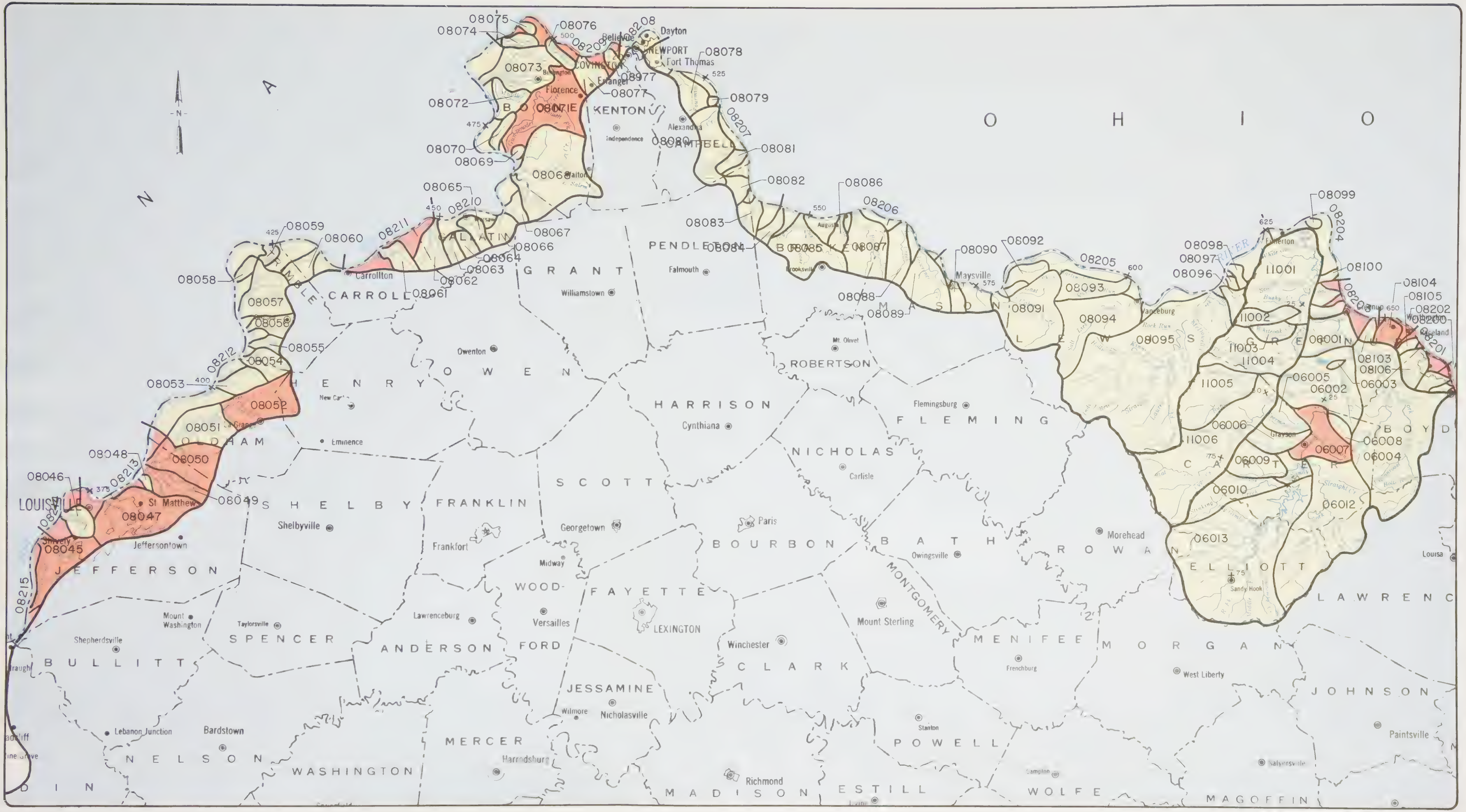
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC
Boston New York Palo Alto Chicago



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BOYD
CARTER
ELLIOTT
TRIMBLE
HENRY
OLDHAM
JEFFERSON
LOUISVILLE
SHELBY
OWEN
HARRISON
ROBERTSON
FLEMING
NICHOLAS
SCOTT
FRANKLIN
BOURBON
BATH
ROWAN
MONTGOMERY
MENIFEE
MORGAN
LAWRENCE
JOHNSON
MAGOFFIN
WOLFE
POWELL
ESTILL
MADISON
CLARK
FAYETTE
WOODFORD
JESSAMINE
ANDERSON
MERCER
WASHINGTON
NELSON
BULLITT
SPENCER
Dayton
Newport
Fort Thomas
Covington
Bellevue
Erlanger
Florence
Independence
Alexandria
Walton
Carrollton
Williamstown
Falmouth
Augusta
Brooksville
Maysville
Vanceburg
Owenton
Cynthiana
Flemingsburg
Carlisle
Paris
Owingsville
Morehead
Sandy Hook
Grayson
Mount Sterling
Winchester
Lexington
Georgetown
Frankfort
Versailles
Midway
Lawrenceburg
Shelbyville
La Grange
Eminence
New Castle
St. Matthews
Jeffersontown
Shively
Mount Washington
Taylorsville
Shepherdsville
Bardstown
Lebanon Junction
Harrodsburg
Nicholasville
Wilmore
Richmond
Stanton
Frenchburg
West Liberty
Paintsville
Salyersville
Louisa
Campton
N

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 5.3m-2

BASINWIDE MANAGEMENT PLAN

LEGEND

- —·—·— COUNTY OUTLINES
- STREAMS
- BASIN OUTLINE
- + RIVER MILES
- 08088 SEGMENT NUMBERS
- SEGMENT BOUNDARIES

STATEWIDE PRIORITY RANKING

- LOW PRIORITY
- MEDIUM PRIORITY
- HIGH PRIORITY

5 0 10 20
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

M&E
METCALF & EDDY, INC.
Boston New York Palo Alto Chicago

EXHIBIT 5.3t STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
06001	26	64	LOW
06002	3	86	LOW
06003	1	102	LOW
06004	88	51	LOW
06005	1	102	LOW
06006	2	90	LOW
06007	204	27	MEDIUM
06008	1	102	LOW
06009	1	102	LOW
06010	2	90	LOW
06011	100	46	LOW
06012	106	38	LOW
06013	109	37	LOW
08001	85	52	LOW
08002	21	69	LOW
08003	1	102	LOW
08004	2	90	LOW
08005	3	86	LOW
08006	1	102	LOW
08906	2	90	LOW
08007	11	72	LOW
08008	128	33	LOW
08009	1	102	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08010	0	130	LOW
08011	1	102	LOW
08012	2	90	LOW
08013	25	67	LOW
08014	0	130	LOW
08015	10	74	LOW
08915	1	102	LOW
08016	1	102	LOW
08017	0	130	LOW
08018	205	26	MEDIUM
08019	0	130	LOW
08020	0	130	LOW
08021	1052	14	HIGH
08022	0	130	LOW
08023	8	78	LOW
08024	0	130	LOW
08025	28	63	LOW
08026	106	38	LOW
08027	0	130	LOW
08028	103	42	LOW
08928	2	90	LOW
08029	1876	13	HIGH

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08030	8	78	LOW
08031	0	130	LOW
08032	2	90	LOW
08033	0	130	LOW
08034	0	130	LOW
08035	161	30	LOW
08036	0	130	LOW
08037	1	102	LOW
08038	0	130	LOW
08039	0	130	LOW
08040	0	130	LOW
08041	1	102	LOW
08042	6	81	LOW
08043	16	70	LOW
08044	42	58	LOW
08045	500	18	MEDIUM
08046	100	46	LOW
08047	308	22	MEDIUM
08048	47	57	LOW
08049	815	16	MEDIUM
08050	231	25	MEDIUM
08051	9	76	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08052	432	20	MEDIUM
08053	2	90	LOW
08054	1	102	LOW
08055	0	130	LOW
08056	0	130	LOW
08057	1	102	LOW
08058	0	130	LOW
08059	0	130	LOW
08060	0	130	LOW
08061	0	130	LOW
08062	0	130	LOW
08063	0	130	LOW
08064	0	130	LOW
08065	2	90	LOW
08066	1	102	LOW
08067	0	130	LOW
08068	31	60	LOW
08069	0	130	LOW
08070	1	102	LOW
08071	640	17	MEDIUM
08072	1	102	LOW
08073	29	62	LOW
08074	1	102	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08075	0	130	LOW
08076	26	64	LOW
08077	11	72	LOW
08977	50	56	LOW
08078	31	60	LOW
08079	0	130	LOW
08080	67	54	LOW
08081	0	130	LOW
08082	0	130	LOW
08083	0	130	LOW
08084	0	130	LOW
08085	26	64	LOW
08086	0	130	LOW
08087	4	85	LOW
08088	1	102	LOW
08089	115	35	LOW
08090	177	29	LOW
08091	3	86	LOW
08092	0	130	LOW
08093	1	102	LOW
08094	1	102	LOW
08095	6	81	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08096	0	130	LOW
08097	0	130	LOW
08098	0	130	LOW
08099	0	130	LOW
08100	1	102	LOW
08101	0	130	LOW
08102	0	130	LOW
08103	25	67	LOW
08104	349	21	MEDIUM
08105	9	76	LOW
08106	12	71	LOW
08107	0	130	LOW
08108	2	90	LOW
08200	4458	12	HIGH
08201	28384	2	HIGH
08202	291	23	MEDIUM
08203	10321	7	HIGH
08204	1	102	LOW
08205	104	41	LOW
08206	10	74	LOW
08207	8	78	LOW
08208	100	46	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
08209	270	24	MEDIUM
08210	2	90	LOW
08211	6910	8	HIGH
08212	97	50	LOW
08213	4546	11	HIGH
08214	13655	4	HIGH
08215	12930	6	HIGH
08216	139317	1	HIGH
08217	6791	9	HIGH
08218	5772	10	HIGH
08219	13394	5	HIGH
08220	155	31	LOW
08221	840	15	MEDIUM
08222	125	34	LOW
08223	0	130	LOW
08224	1	102	LOW
08225	1	102	LOW
08226	18530	3	HIGH
08227	0	130	LOW
10001	0	130	LOW
10002	42	58	LOW
10003	102	44	LOW

EXHIBIT 5.3t (continued) STATE-WIDE PRIORITY RANKING

Segment Number	Segment Priority	Rank in ORB	State-wide Priority Ranking
10004	476	19	MEDIUM
10005	102	44	LOW
10006	72	53	LOW
10007	100	46	LOW
10008	113	36	LOW
10009	152	32	LOW
10010	103	42	LOW
10011	6	81	LOW
10012	203	28	MEDIUM
10013	1	102	LOW
10014	105	40	LOW
11001	6	81	LOW
11002	1	102	LOW
11003	1	102	LOW
11004	3	86	LOW
11005	2	90	LOW
11006	65	55	LOW

		Factor
Treatment	T1	2
	T2	2.5
	T3	3.5
	T4	4.5
	T5	6
Infiltration-Inflow		1.5
Interceptors		2
Collectors		1
Combined sewers		0.5

The product of the percent of total cost times the factor is next multiplied by the segment priority (the segment in which the particular municipality is located has been assigned a priority number in Chapter IV). It should be noted that this segment priority does not include allowance for heavy metals, temperature or nonpoint source and industrial discharges.

Finally, the sum for each category is added to obtain the numerical part of the municipal priority. To illustrate this procedure the construction grant priority calculation for Hardinsburg, which will require upgrading from secondary treatment to T4B treatment, is presented below:

Construction Grant Priority for Hardinsburg

	1980 cost (million $)	Percent total		Factor		Segment priority		Subtotal
Treatment	.83	.44	x	4.5	x	161	=	319
Infiltration-Inflow	.80	.42	x	1.5	x	161	=	101
Interceptors	.03	.02	x	2	x	161	=	6
Collectors	.22	.12	x	1	x	161	=	19
Combined sewers	–	–	x	–	x	–	=	–
Total	1.88							445

Two letters (one capital and one lower case) are added at the end of the numerical construction grant priority. The capital letter is based on the population served by the plant and the lower case letter is based on the status of the 201 facilities planning for the plant.

Capital letter designation is determined as follows:

A if included in an SMSA
B if population is over 10,000 and outside an SMSA
C if population is less than 10,000

Small letter designation is determined as follows:

a if 201 planning has begun
b if 201 design has begun
c if 201 design is finished

The final priority for Hardinsburg would be 445Ca since Hardinsburg is not within an SMSA, its population is less than 10,000, and the planning phase of its 201 study has begun. In cases where 201 facility planning has not yet started, the lower case letter is replaced by a dash.

Cost Information:

All cost information is based on the January 1975 Engineering News Record (ENR) Construction Cost Index adjusted for the City of Cincinnati, Ohio. In order that costs for the entire State of Kentucky (all 10 river basin 303e plans) are comparable, the following source of cost information were used in order of their availability:

1. 1974 Kentucky Needs Survey data
2. Cost curves supplied by State of Kentucky
3. Cost curves developed by University of Louisville
4. Cost curves developed by M&E

Cost figures presented in Exhibit 5.2t represent construction costs and do not include an allowance for engineering and contingencies or land acquisition costs. Operation and maintenance costs were not included although they are an important factor in choosing alternative methods of water quality control.

When cost curves did not include costs for plants with flows of less than 1 mgd, cost estimates are prepared based on type of treatment and cost of larger plants using scale factors.

The 1980 cost for municipal needs includes cost for treatment needs, interceptor needs, collection system needs (including pump stations), infiltration-inflow needs and combined sewer needs. For treatment plants and interceptors, if a need is recognized within the next 5 years then the design criteria used in cost estimates is based on 1995 conditions. The 1980 collection system costs are estimated based on what will be needed within the next 5 years. The infiltration-inflow and combined sewer abatement costs are based on present needs.

Whenever possible, the 1974 Needs Survey Costs developed by the State of Kentucky were used. Cost estimates for municipalities not included in the 1974 Needs Survey followed as closely as possible the methods used for the Needs Survey.

Domestic Discharges

There are four general approaches considered in the effort to improve water quality that has been degraded by the effluents from domestic package wastewater treatment plants. They are as follows:

1. Improved effluent characteristics by adding treatment processes to the existing facility (including land application).

2. Storing the discharge in lagoons during periods of low flow in the receiving streams.

3. Regionalize the facility with a larger municipal plant or a group of other domestic plants (relocating the discharge).

4. Improve the operation and maintenance to upgrade the assumed existing discharge characteristics (BOD_5 = 24 mg/L, NH_3-N = 2.3 mg/L, DO = 4.0 mg/L).

The first alternative considers adding physical and/or biological processes to the existing treatment process. For the purpose of this discussion it is assumed that the existing treatment is extended aeration activated sludge. This is a reasonable assumption since more than 90 percent of the domestic discharges are extended aeration package plants.

BOD and Suspended Solids Removal:

The range of alternatives available to meet effluent requirements of 10 mg/L BOD_5 and 10 mg/L suspended solids (SS), as shown on Exhibit 4.11t are:

1. Multimedia Filtration
2. Immedium Filtration
3. Microscreens
4. Land Application
5. Intermittent Sand Filtration

The alternatives available as shown on Exhibit 4.11t to meet an effluent of less than 10 mg/L BOD_5 and less than 10 mg/L SS are:

1. Filtration and Adsorption
2. Two-stage lime coagulation
3. Land Application

Description of these processes are presented in Chapter IV under Description of Individual Processes.

Nitrification and Phosphorus Removal:

The extended aeration process can meet a standard of 4 mg/L NH_3-N during the summer months and, therefore, no additional processes are needed to achieve seasonal nitrification providing the plant's operation and maintenance are satisfactory.

In order to achieve year round nitrification the extended aeration process requires one of the following additional treatment processes:

1. Sedimentation
2. Chemicals to Primary Treatment
3. Roughing Filters
4. Land Application

These processes are also illustrated in Exhibit 4.11t and are described in Chapter IV.

The difference between seasonal and continuous nitrification can be a costly one and should be carefully considered.

Phosphorus removal is only considered when discharges enter impoundments. The primary methods used to remove phosphorus are the addition of metal salts and biological chemical lime precipitation also described in Chapter IV.

Aeration:

In many cases improvement in the dissolved oxygen of the treatment plant effluent is sufficient to insure acceptable water quality. The three generally accepted methods of increasing the dissolved oxygen in the treatment plant effluent are:

1. Diffused Aeration
2. Mechanical Aeration
3. Hydraulic Aeration

It should be noted that in the water quality modeling effort an effluent dissolved oxygen concentration of 4.0 mg/L was assumed for all domestic discharges. In fact, some discharges may have higher effluent dissolved oxygen due to specific conditions and these cases should be recognized in detailed planning and design efforts.

The second alternative, storing discharges during periods of low flow, could be used by one or more discharges to insure adequate stream water quality. This alternative is especially appealing when assimilation capacities are low due to flat slopes and sluggish flow. In these cases very high degree of treatment (i.e., T5B) would be necessary to meet water quality standards. Besides protecting a stream during low flow, a lagoon would improve the effluent water quality and serve as a safety factor in case of treatment plant malfunctions.

For small rural discharges where land area is not a critical factor, this is a reasonable alternative. For example, the lagoon area required to hold a flow of 50,000 gpd for two months (60 days) assuming a lagoon depth of 6 feet is approximately 1.5 acres.

The third alternative, of eliminating the detrimental effect of individual domestic discharge, is to connect them with a larger municipal plant where there is either more effective treatment or a more favorable discharge location. This alternative is especially favorable when the municipal collection system is easily accessible. Such is the case for many domestic treatment plants in Jefferson County. For specific cases where regionalization is an alternative to advanced treatment see Appendix B, Segment Analysis.

The last alternative is a realistic alternative particularly during the summer months when the low flow is most likely to occur. Extended aeration package plants can, during the summer, if operated properly get removals better than assumed in the water quality model. (Values used in the water quality model are BOD_5 = 24 mg/L, NH_3-N = 2.3 mg/L, DO = 4.0 mg/L.) Therefore, for cases of minor water quality violations improvement in operation and maintenance can offer a better alternative.

Industrial Discharges:

Wastewater from industries can be classified into three categories: sanitary wastewater, process flow wastewater, and cooling water. Oxygen demands exerted by sanitary and industrial process flow wastewaters were included in the water quality modeling of the tributaries and in the Ohio River main stem. Cooling water flow is included in the water quality modeling for the tributaries only as flow providing dilution to waste load and the waste heat discharged was not modeled. Effects of cooling water discharges were, however, included in calculating the segment priorities. Based on the results of the water quality modeling, waste load allocations were made so that water quality standards for DO and NH_3-N can be met. The waste load allocations incorporated any discharge limitations imposed by the NDPES permits. All industrial waste load allocations were done in pounds/day or mg/L to reflect NPDES permit requirements.

In cases where industrial pollutants from a process flow did not directly effect the DO of the stream but still violated water quality standards, allocations were set to conform with the NPDES permits and state water quality standards. These pollutants included heavy metals, oil and grease, phenols, coliform and many others. Any significant industry discharging to a municipal wastewater treatment system was assumed to pretreat its waste to remove any toxic substance.

Cost information for industrial treatment was not developed and industries were not ranked as were municipal discharges.

Compliance Goals:

Compliance goals have been established for 1980 and 1995 for all significant discharges in both water quality and effluent limited segments and are presented in Exhibit 5.2t. The compliance goals are intended to be stringent enough to meet water quality standards and also be economically and technologically feasible. Compliance goals for the 1980 target date are intended to meet current water quality standards and conform with existing NPDES permits. In some cases, NPDES permits list intermediate goals prior to 1980 which lead in a progressive way to the 1980 goals. These intermediate target dates have not been included in Exhibit 5.2t.

The 1995 compliance goals in most cases reflect any increase in discharge capacity. In this case, any change in compliance goals would be a function of the change in the dilution ratio between discharge and stream flow. For those situations where the 7-day 10-year low flow is zero, the dilution ratio is not changed; therefore, the compliance goals are usually not changed.

In general, the compliance goals for municipal discharges can be divided into two categories: those municipalities on the minor tributaries to the Ohio River which have very small or zero 7-day 10-year low flow and those on the Ohio River. Plants on the minor tributaries with a few exceptions require T4B treatment by 1980. Municipal plants at Sturgis, Marion and Greenup which presently achieve adequate treatment during summer months would only need nitrification if a year round ammonia nitrogen level of 4 mg/L is required.

All municipalities on the Ohio River main stem will have secondary treatment by 1980. The 1980 compliance goal for these facilities is EPA-defined secondary treatment. In some cases where existing secondary facilities don't meet EPA standards for secondary treatment, filtration and/or chlorination processes would be needed.

Domestic discharges on the minor tributaries, depending upon the characteristics of the receiving waters and the benefit of dilution from upstream flow, need in most cases to upgrade their effluent. Generally, upgrading is accomplished by increasing the DO to prevent violations of the 5 mg/L limit and/or reducing the ammonia nitrogen to prevent violation of the 4 mg/L limit. Cost estimates for upgrading domestic plants have not been made as per instruction by the Division of Water (Quality).

The compliance goals for industrial process flows are dealt with on a case by case basis and comply with NPDES permits and existing regulations.

Compliance goals should be updated as more detailed planning is done, as facilities are constructed and as water quality data are collected and analyzed.

Management of Non-Point Source Discharges:

Non-point source pollution occurs in varying degrees throughout the entire Ohio River Basin. Rural areas produce pollutants from agricultural, silvicultural, construction and mining activities. Pollutants from these activities include sediment, nutrient elements chiefly nitrogen and phosphorus, mineral pollutants, acid mine drainage, pesticides and organic wastes. Urban areas produce non-point source pollutants from urban runoff, combined sewage overflows, and construction activities.

A unique character of non-point source pollutants is that they accompany storm runoff and unlike point source discharges, are usually most damaging to the surface water environment during high flows over limited periods of time. Unfortunately, data on what types of pollutants are generated and how much is generated is scarce. Due to the lack of data any predictive modeling effort must rely on "typical" values from data collected in other areas. It is therefore suggested that water quality monitoring of non-point sources be carried out in a case by case basis to determine if there is any significant difference between typical values and those recorded in the Ohio River Basin.

The abatement of non-point sources can best be accomplished by either of two methods: land management and reclamation and/or treatment. Land management and reclamation play the dominant role in the rural areas. In rural agricultural areas, proper tilling practices, timely application of fertilizers and pesticides, irrigation practices and changes in land use can markedly effect the contribution of pollutants to receiving waters. In the mining areas of the Little Sandy and Tradewater Rivers proper surface mining techniques, such as the modified block cutting in contour surface mining of coal, along with reclamation of the disturbed land is essential in the effort to abate acid mine drainage. Also important in reducing the effect of acid mine drainage is the adequate monitoring and surveillance and identification of abandoned mining operations which continue to pollute. Federal legislation intended to regulate strip mining activities has not been resolved so far due to competing economic conditions.

Construction related pollution, primarily sediment, can be controlled by a host of measures, such as sedimentation basins, which tend to reduce the amount and intensity of runoff. New construction can also incorporate in its design, methods such as roof top and parking lot storage, to control runoff and minimize subsequent downstream erosion. These measures are applicable in urban areas as well as rural areas.

The two main non-point sources of surface water pollution in urban areas are urban storm runoff and combined sewage overflows, the only difference between the two being the addition of sanitary sewage to storm runoff in the case of combined sewage overflows. Stormwater management problems can be reduced by employing natural or man-made retention storage facilities and/or treatment facilities. In the case of combined sewage overflows any treatment scheme should give attention to the disinfection of pathogenic bacteria. Accompanying any stormwater management program should be an emphasis on effective operation and maintenance of its component parts such as overflow regulators, flood gates and street cleaning practices.

Since the 1980 municipal needs for the Ohio River Basin indicate that the estimated cost for abating combined sewer overflows will comprise approximately 59 percent (782 million dollars) of the total estimated cost for the Ohio River Basin, it is important that careful attention be given to this problem in 208/201 studies. Of the 782 million dollars 560 million is estimated to be required for the Louisville area making stormwater management a significant task in the 208 study for the Louisville metropolitan area.

WATER QUALITY MONITORING AND SURVEILLANCE

Water quality monitoring and surveillance in the Ohio River Basin in Kentucky consists of two separate monitoring strategies. These are:

1. Monitoring strategy now being developed by the Kentucky Department of Natural Resources and Environmental Protection in cooperation with various state and federal agencies for the waters of the Commonwealth.
2. Monitoring strategy developed by ORSANCO in cooperation with various state and federal agencies for the Ohio River and mouths of its major tributaries.

The strategy for monitoring waters of the Commonwealth is being developed as a coordinated effort of state and federal agencies who have a responsibility and direct interest in water quality in the Commonwealth of Kentucky. A team of representatives from five federal agencies and seven state agencies are now in the process of finalizing the monitoring strategy for the waters of Kentucky. The five federal agencies involved are:

1. U. S. Geological Survey
2. U. S. Army Corps of Engineers
3. U. S. Environmental Protection Agency
4. U. S. Department of Agriculture
5. Soil Conservation Service

The state agencies involved are:

1. Department of Natural Resources and Environmental Protection (DNR&EP)
2. Division of Water (Quality), DNR&EP
3. Division of Sanitary Engineering
4. Department of Fish & Wildlife, DNR&EP
5. Division of Conservation
6. Kentucky Geological Survey
7. Office of Local Government

The strategy was developed to its current state along two lines of needs. The primary need for monitoring was to locate stations in each major river basin such that they will describe the water quality profile of the waters of the Commonwealth. It is necessary that the quantity (flow) of water be either directly measured or that a primary water quality monitoring station be located such that the volume of water can be reasonably quantified. The secondary need addressed by the strategy was defined as needs to supplement the primary network and to fill the remaining needs of individual agencies not covered by the primary network.

Currently, the strategy is to measure the following parameters at the prescribed frequency noted:

Automatic Monitor at Selected Stations:

Basic physical and chemical	Frequency
Temperature	Hourly
DO	Hourly
Conductivity	Hourly
pH	Hourly

At All Primary Stations:

General chemical	Frequency
Acidity	Weekly
Alkalinity	Weekly
BOD_5	Monthly
COD	Monthly
Chloride	Weekly
Cyanide	Weekly
Fluoride	Weekly
Total Hardness	Weekly
Magnesium	Weekly
MBAS	Weekly
NH_3-N	Weekly
NO_3-N	Weekly
TKN	Weekly
pH	Weekly
Phenolics	Weekly
Phosphorus, Total Dis.	Weekly
Total Phosphorus - P	Weekly
Potassium	Weekly
Solids, Dissolved	Weekly
Solids, Suspended	Weekly
Sulfate	Weekly
Sulfide	Weekly
Sodium	Weekly
Turbidity	Weekly
Silica	Weekly
TOC	Weekly

Trace elements	Frequency
Arsenic	Weekly
Barium	Monthly
Cadmium	Monthly
Chromium, Total	Monthly
Chromium, Hex.	As needed
Copper	Monthly
Iron	Monthly
Lead	Monthly
Manganese	Monthly
Mercury	Monthly
Nickel	Monthly
Selenium	Quarterly
Silver	Monthly
Zinc	Monthly

	Frequency
Radio chemical	As needed
Pesticides	As needed
Bacterial	
Coliform, Fecal	Weekly
Coliform, Total	Weekly
	Frequency
Biological	As needed
Sedimentation	
Particle size distribution	As needed

Of the 72 primary stations in the Kentucky monitoring network, only two are in the Ohio River Basin. These are:

1. Little Sandy River at Grayson
2. Gun Powder Creek below Florence

These stations are shown on Exhibit 3.4m. The monitoring station on the Little Sandy River at Grayson records both flow and water quality data. No records for flow or water quality are available for the other station. For details of recording frequency, reference is made to Kentucky water quality monitoring strategy report.

There are 105 secondary stations in Kentucky's water quality monitoring network. Of these, twelve are in the Ohio River Basin. These are:

1. Otter Creek at Ky. 388 Br.
2. Blackford Creek near Maceo
3. Harrods Creek near Skylight
4. Harrods Creek near La Grange
5. South Fork, Beargrass Creek, Louisville
6. Tygarts Creek, Greenup
7. Little Fork, Little Sandy River, Grayson
8. Little Sandy River, below Grayson Reservoir
9. Tradewater River, below Grab Orchard Creek
10. Tradewater River, Providence
11. Tradewater River, Murphy Ford
12. Clear Creek at mouth

These secondary stations are also shown on Exhibit 3.4m.

In addition to Kentucky's monitoring strategy, "A Recommended Water Quality Monitoring Strategy for the Ohio River and Lower Reaches of Major Tributaries" has been developed by the Ohio River Monitoring Strategy Study Team. This study team consisted of representatives from ORSANCO, U. S. Environmental Protection Agency, U. S. Army Corps of Engineers, U. S. Geological Survey and from the states of Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Virginia and West Virginia.

According to the Water Quality Monitoring Strategy Report published by ORSANCO in 1973, there are at present 36 primary monitoring stations in the stretch of Ohio River that fall within the Ohio River Basin Area. Of these, fourteen stations will continue to operate, twelve will be relocated, ten will be abandoned and nine new monitoring stations will be established according to the recommended monitoring strategy. For locations and details of these monitoring stations, the reader is referred to the ORSANCO report.

The monitoring stations recommended by the Kentucky Water Quality Monitoring Strategy Report and those recommended by the Ohio River Monitoring Strategy Study team appear to be adequate for monitoring the water quality in the Ohio River Basin. No additional monitoring stations are, therefore, recommended for the Ohio River Basin Area.

RELATIONSHIP TO OTHER PLANS

Public Law 92-500

Public Law 92-500 provides for three types of water quality plans: river basin planning (Section 303e), designated areawide waste treatment management planning (Section 208), and facilities planning (Section 201).

River basin plans, of which there are ten in the State of Kentucky, provide the basic management guide for areawide action by analyzing water quality, identifying areas in need of more detailed planning and ordering priorities for federal municipal construction grants.

Planning under Section 208 and Section 201 carry the river basin planning one step further while remaining consistant with the objectives established by the river basin plan. Section 201 planning relates directly to publicly owned treatment works to be constructed with federal grant money. In Kentucky, every publicly owned treatment facility will be subject to 201 planning prior to any expansion or upgrading. Many of these projects which evaluate technical and economical alternatives that will meet overall water quality objectives set by 303e planning are underway at this time.

Section 208 planning provides comprehensive regional planning for areas with substantial water quality control problems. These plans deal with the technical, economic and management problems faced in urban areas which often cross many jurisdictional boundaries. In Kentucky, only Louisville (Jefferson County) and Northern Kentucky (Boone, Keaton and Campbell counties) are subject to 208 planning. Exhibit 5.4m shows the 201 and 208 planning areas.

Related Planning

The Corps of Engineers' Urban Studies Planning includes a wastewater management phase not unlike the 208 areawide planning. The Huntington District of the Corps is presently engaged in an urban study of the Ashland-Huntington Tri-County Area. Since Ashland is undertaking a 201 facility plan, the Corps is concentrating its efforts in the West Virginia-Ohio areas and will incorporate the Ashland 201 findings in its overall plan.

Presently, there are no other urban studies planned for the Ohio River basin.

In addition to the three types of water quality plans mentioned under Public Law 92-500, there are also provisions under Section 209 which direct the Water Resources Council to prepare comprehensive water and land use plans for major river basins in the United States. These plans, which are to be prepared by January 1, 1980, would address long-range problems and be integrated with ongoing 208 and 303e planning. Such a plan for the entire Ohio River Basin is now being prepared on a test basis for the National Commission on Water Quality.

LAND USE POLICIES AND CONTROLS

Introduction

The ways in which land resources are utilized or conserved has significant impacts on water quality. Further, water quality will depend in a significant way on future growth and future land use. It is, therefore, important to integrate land use policies and controls into water quality planning.

The Present Situation

In the past, control of land use in this country has been carried out directly by local governments. Kentucky's planning statutes contained in KRS 100 (including the 1966 revisions) are based essentially on 50-year old enabling laws designed when cities were compact, undeveloped land was abundant and the environmental and social consequences of development were not of major concern. Land was viewed as a commodity, and zoning and other regulatory measures were tools utilized chiefly for the purpose of protecting property values.

Planning tools which are currently available to cities and counties in Kentucky under KRS 100 include: (1) comprehensive plans containing a statement of goals and objectives and principles, policies and standards to serve as a guide for the physical development and economic and social well-being of the planning unit, together with plans for land use, transportation and community facilities. A comprehensive plan may include any additional elements such as community renewal, housing, flood control, pollution, conservation, natural resources, and other programs which in the judgment of the planning commission will further serve the purposes of the comprehensive plan; (2) zoning regulations; (3) subdivision regulations; (4) an official map; and (5) a capital improvement program and budget.

Land use planning was first introduced to many of Kentucky's smaller communities with the enactment of the Housing Act of 1954. Section 701 of the Act was originally designed to facilitate urban planning for smaller communities which lacked adequate planning resources. Planning activities funded through the 701 program during its first 10 to 15 years of existence were almost exclusively concerned with physical planning including inventories of land use and other existing conditions, population and economic base analysis, plans for land use, community facilities, circulation and recreation, preparation of zoning ordinances, subdivision regulations and capital improvement programs. A proliferation of 701 funded comprehensive plans and zoning ordinances were prepared for Kentucky communities during the period from 1954 to 1970, many of which are in force today, essentially in their original form.

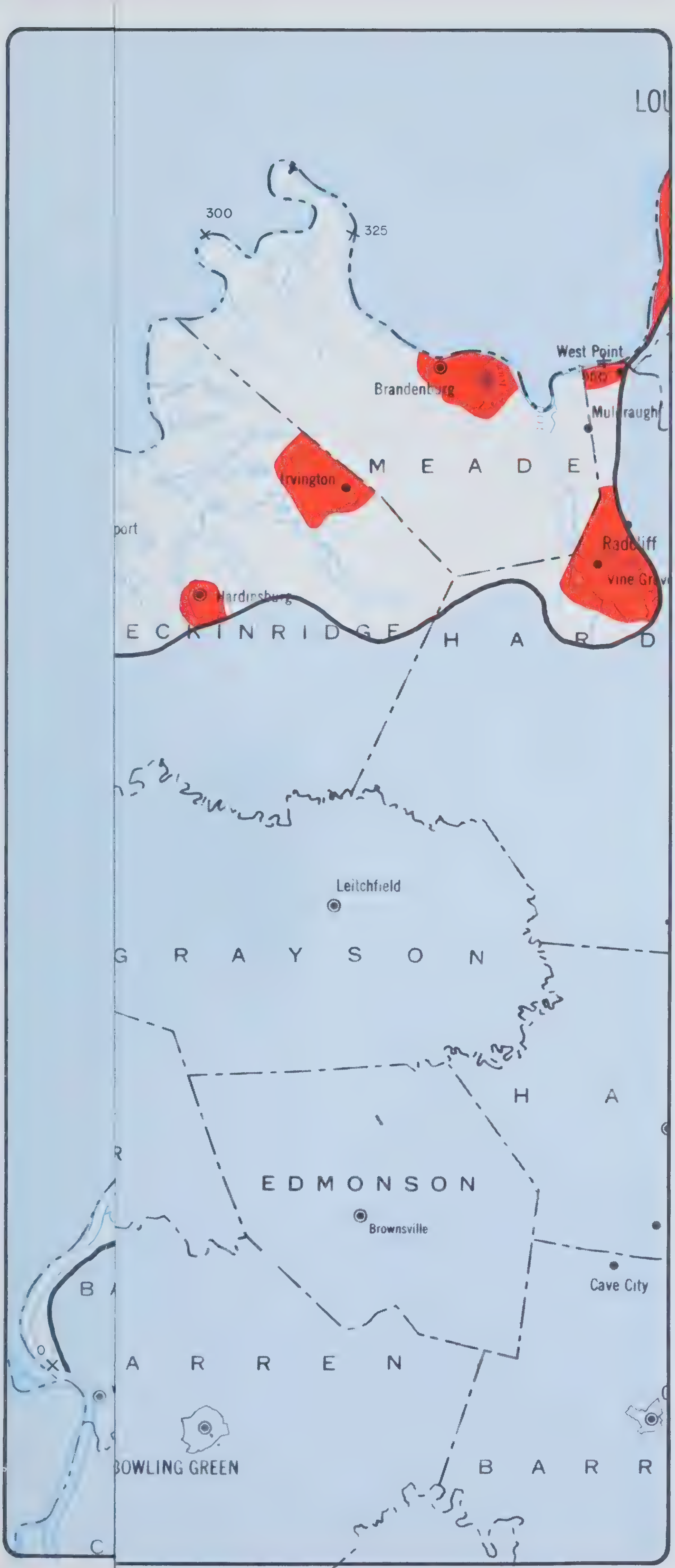
Through legislative amendments and administrative action, the 701 program has become the basic federal grant program for most planning agencies. Eligible recipients now include localities of all sizes, counties, metropolitan and regional planning agencies, councils of governments, states, specialized agencies such as transportation planning organizations and interstate agencies. Kentucky was one of the first states to institute substate regionalism with the creation of 15 Area Development Districts (ADD's), all of which rely heavily upon the 701 program for funding. The avowed functions of Kentucky's Area Development Districts are to:

1. Provide needed technical assistance to local governments;
2. Coordinate state and federal efforts to assist communities;
3. Review and coordinate local development proposals; and,
4. Conduct the necessary research and studies and coordinate and cooperate with all appropriate groups and agencies in order to develop, and adopt and revise, when necessary, a district development plan or series of plans, including, but not limited to, the following district-wide plan elements: goals and objectives; water and sewer; land use; and open space and recreation. Such plans shall serve as a general guide for public and private actions and decisions to assure the development of public and private property in the most appropriate relationships.

With regard to land use planning, the following accurately reflects the current situation with Kentucky's ADDs.

> With a few widely scattered exceptions, substate regionalism has not produced a viable approach to land use planning. The areawide planning bodies are usually entirely advisory agencies, with no direct tie to any level of government which has executive or legislative functions. Neither local nor state governments have felt it necessary to follow, or even to receive the advice of an amorphous group not responsible to them, and to which they are not directly responsible, and which has a territorial "jurisdiction" which does not coincide with that of any elected official.
>
> This situation typically forces areawide agencies to devote their efforts almost entirely to the preparation of plans, and to play little or no role in plan implementation.

One of the fundamental issues which must be resolved in any effort to improve land use planning in not only Kentucky but also throughout the United States is the heavy reliance of local governments on property taxes for a major share of their tax revenues. With the current situation, property taxes play a significant role in almost every land use decision made at the local level. So long as the property tax provides the major share of operating revenues for local governments, land use decisions will in all likelihood continue to be made on the basis of economic consideration rather than land capability.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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 5.4m-1

RELATIONSHIP TO OTHER PLANS

LEGEND

- — - — COUNTY OUTLINES
- STREAMS
- ▬ BASIN OUTLINE
- + 25 RIVER MILES

OTHER PLANS

- 🟥 201 PLAN (STATE)
- ▨ 208 PLAN

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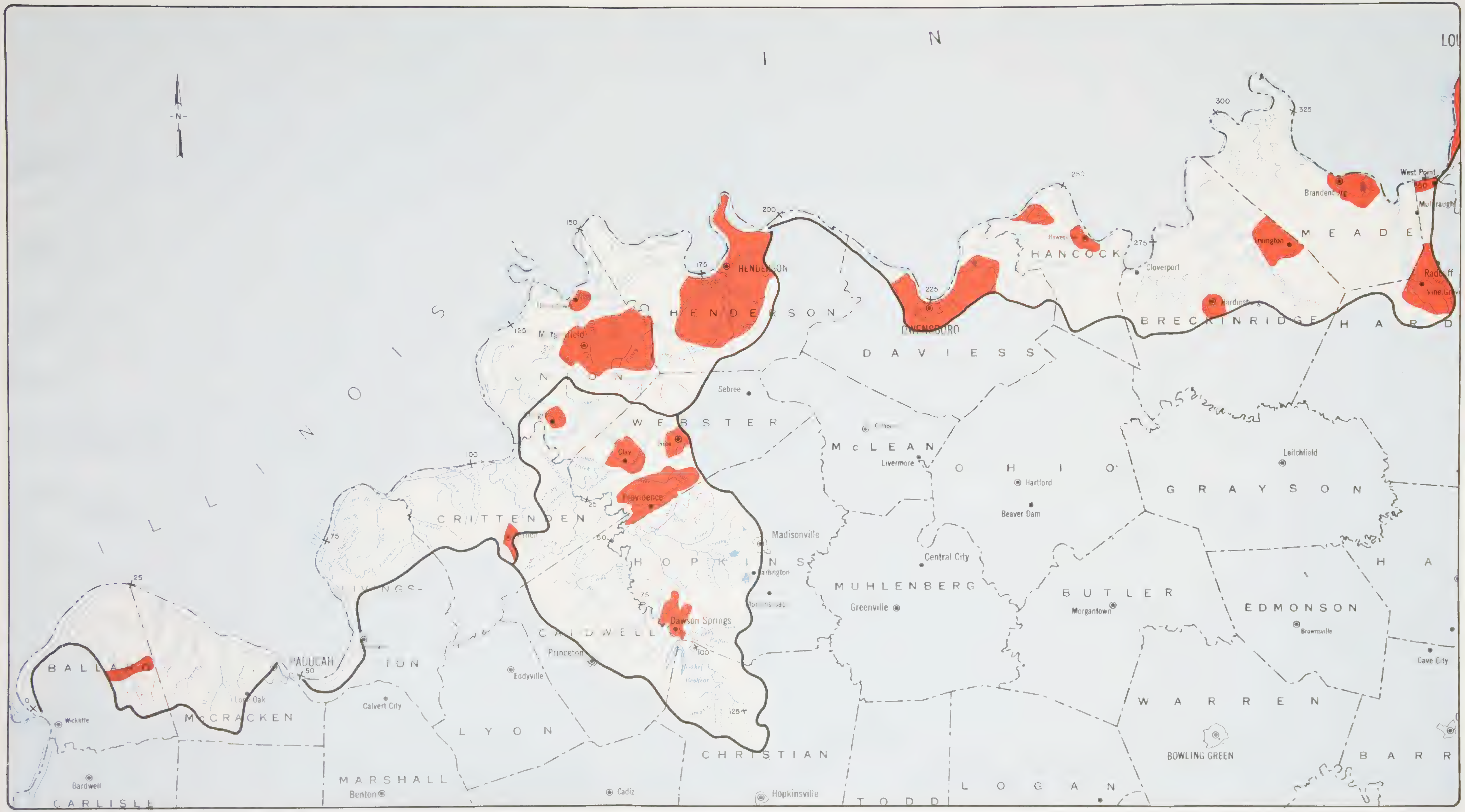
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC.
Boston New York Palo Alto Chicago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OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 5.4m-1

RELATIONSHIP TO OTHER PLANS

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+ 25	RIVER MILES

OTHER PLANS

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▨	208 PLAN

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GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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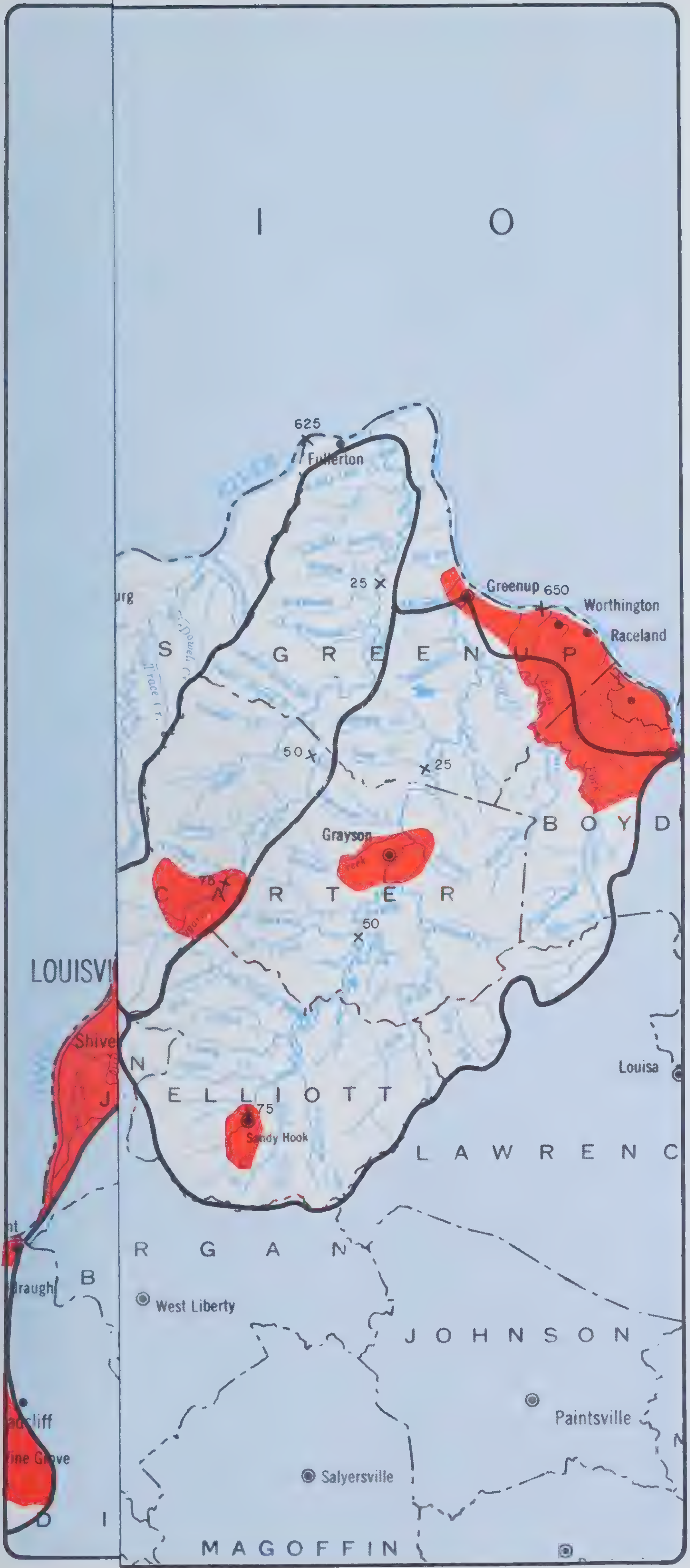
OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT 5.4m-2

RELATIONSHIP TO OTHER PLANS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+ 25 RIVER MILES

OTHER PLANS

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▨ 208 PLAN

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GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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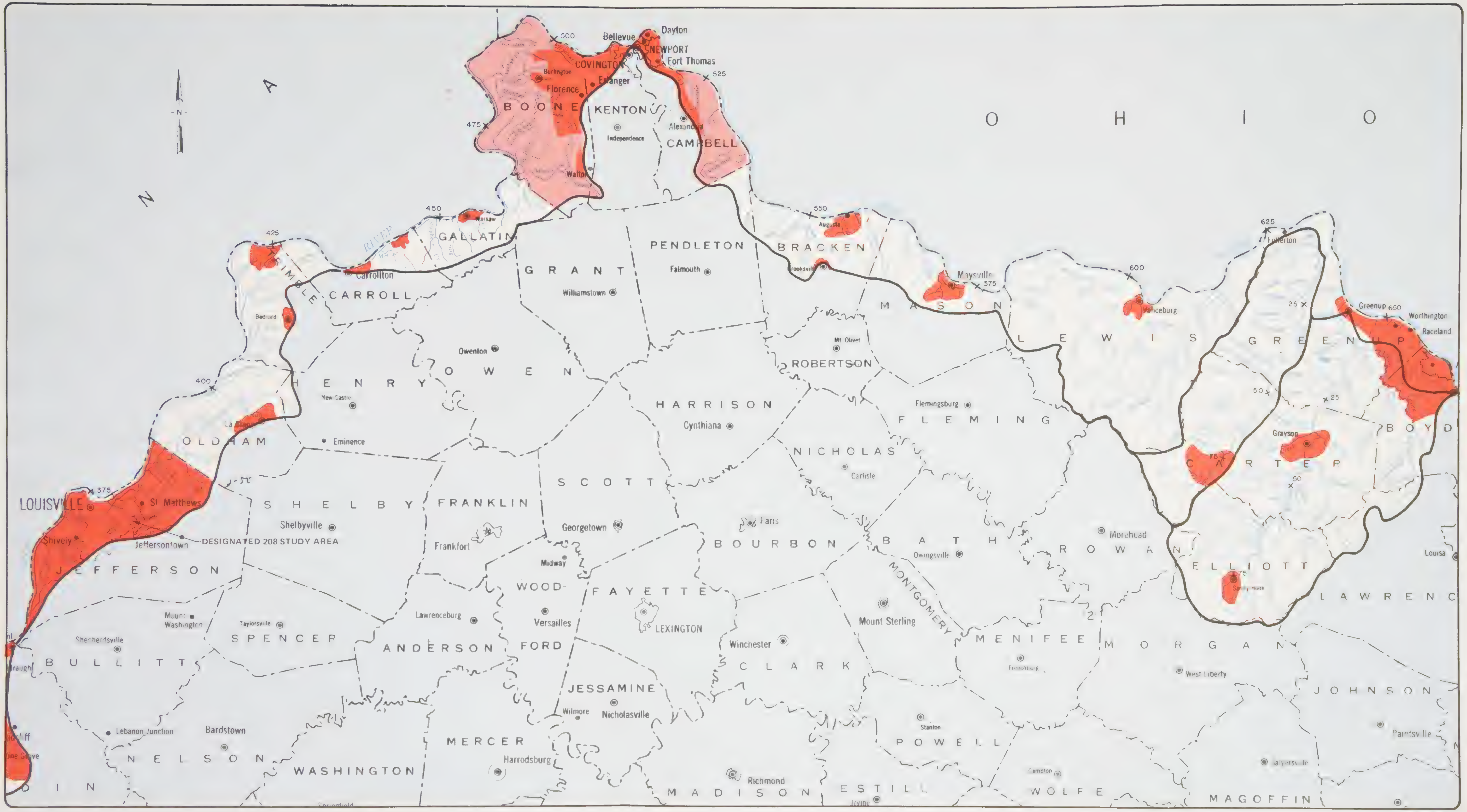

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PENDLETON
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208 PLAN
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GRAPHIC SCALE IN MILES
Base Data: U.S. Geological Survey

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT 5.4m-2

RELATIONSHIP TO OTHER PLANS

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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Boston New York Palo Alto Chicago

Possible alternatives to the local property tax which have been offered by knowledgeable persons include:

1. Broadening the base of local and state taxation through greater use of personal income and general sales taxes;
2. Creation of areawide tax jurisdictions;
3. Expansion of federal and implementation of state revenue sharing;
4. Use of alternative revenue sources such as user charges.

Federal Role

The federal government provides extensive assistance to states and local governments and other agencies and organizations in the form of grants, loans, guarantees and technical assistance programs, many of which relate an impact upon the way in which land is developed and used.

Although there is not on record a coordinated comprehensive set of national goals and policies, increasing emphasis has been placed in recent years on environmental consequences of federal actions. With the enactment of the National Environmental Policy Act of 1969, all federal and federally related actions having possible major effects on the environment are to be undertaken only after the preparation and filing of an Environmental Impact Statement. The Act affects all levels of the federal government as well as other activities which may be financed or connected with the expenditure of federal funds.

In 1973, the federal government enacted the Flood Disaster Protection Act which provides regulations governing construction in floodplains and federally subsidized flood insurance for property with the floodplain. Since much of the existing urban development in the Ohio River Basin is along river courses, this legislation has an effect on the direction of future development in these areas.

In recent years, Congress has spent considerable time in debating proposed federal land use legislation, and, while a federal land use bill has yet to pass both houses of Contress, it is likely that before too long a land use bill will be placed on the statute books.

The land use bill which has come closest to passage called for land use decisions to be made on the basis of impact. Purely local decisions which affect only the local community would continue to be made by local public officials and local citizens. The American Law Institute estimates that nearly 90 percent of land use decisions are of purely local impact and significance, leaving only 10 percent to regional, state and federal review.

In the various land use bills which have been considered by Congress, the following provisions are generally included:

1. Designation of a state planning agency with planning staff and authority to compile a data base for planning, develop a land use planning program and coordinate its activities with local, state and federal planning and pollution control agencies.
2. Inventories of land and natural resources including projections of land needed and suitable for development to meet economic and social needs.
3. Development of methodologies to control use and development of land of more than local significance due to its size, environmental impact or potential to induce growth.

Five critical areas and use are generally designated for control in most of the proposed land use bills:

1. Areas of critical environmental concern, including historical or ecologically fragile lands, land subject to flooding and other natural disasters and regionally significant agricultural and watershed lands;
2. Key facilities including those public facilities which tend to induce development or urbanization of more than local impact, including airports, highway interchanges, recreational areas and energy facilities;
3. Development of public facilities or utilities of regional benefit - including development of methods to assure that local regulations do not arbitrarily or capriciously exclude development of public facilities, housing or utilities of regional benefit.
4. Large scale development - private development such as shopping centers, large subdivisions or apartment complexes which have the potential of creating environmental problems or generating additional development.
5. Land sales and development projects - large scale development more than 10 miles from a planning unit - second homes, vacation resorts and rural subdivisions.

The State Role:

Many feel that states, with their existing powers and financing capabilities, are best suited for implementing comprehensive land use planning. A number of states have already initiated state level land use controls of a comprehensive nature, with two systems of controls generally employed. One involves state establishment of guidelines for and administrative review of local land use planning, zoning and regulatory controls (Florida and Oregon). A second approach involves direct state planning and control (Hawaii, Vermont and Maine).

At the state level in Kentucky neither comprehensive quality-of-life nor economic, social or related goals which include consideration of population densities, population distribution, development types or other general measures of carrying capacity have been developed to guide state actions. An Economic Development Commission and an Environmental Quality Commission have been established, but each are apparently pursuing their separate courses with little or no interface to insure compatibility among goals and purposes.

However, the Kentucky Environmental Economic Development Policy Project, a group appointed by the Legislative Research Commission and partially financed by the National Science Foundation, has recently suggested the establishment of a Kentucky-Enviro-Economic Council. The council, to be appointed by the governor, would seek ways to resolve conflicts between economic development and environmental protection and would be composed of representatives of business and industry, conservation, education, local and state government, labor and agriculture.

At the present time, Kentucky has not enacted statewide land use planning. However, largely in anticipation of adoption of a National Land Use Planning Bill, the 1974 Kentucky General Assembly enacted a new section of KRS 147 which recognized the need for statewide land use planning:

> . . . in order to protect the natural resources and environment of the Commonwealth, and to insure a water management system that will prevent, and reverse whenever necessary, the deterioration of water quality and provide optimum utilization of our limited water resources, and to facilitate orderly and well planned development and to protect the health, welfare, safety and quality of life of the residents of Kentucky, it is necessary to adequately plan for and guide growth and development within the Commonwealth. In order to accomplish these purposes, it is necessary that the Commonwealth of Kentucky establish land and water management policies to guide and coordinate state, interstate and local decisions relating to growth and development, and that such state land and water management policies should to the maximum possible extent be implemented by local governments through processes for the guidance of growth and development, and that all the existing rights of private property be preserved in accord with the constitution of Kentucky and the United States.

The Act also established a Council for Land Use Planning composed of 15 members appointed by the governor and representing a balance of interests in the Commonwealth. The Council is to be the Kentucky agency to fulfill federal requirements for associated federal programs designed to provide support for state land use planning functions.

In summary, both the state and local units of government need to take initiatives in examining innovative planning and growth management techniques so that equitable compromises can be established between the rights of property owners and the demands and needs of the larger community and the environment and to insure that the majority of land use decisions which are of only local concern remain within the purview of the local community.

Mining Operations:

Much of the land area in the Tradewater and Little Sandy River basins are rich in coal deposits. The mining operations (both strip mining and deep mining) in the past have significantly effected local water quality due to acid mine drainage. Water quality records have shown pH values in the Tradewater Basin to be as low as 2.3. Certainly with the increasing pressure to produce coal for energy, it becomes important to recognize and control the adverse side effects related to mining operations.

Kentucky has enacted strip mine legislation which is considered by many to be a model law. The Division of Reclamation within the Department for Natural Resources and Environmental Protection has been given responsibility for implementing these measures. The Division in turn has issued a number of regulations which detail strip mining standards and requirements, including "SMB-Rg-6: Backfilling, Grading, Reclamation and Method of Operation" which specifies such things as bench width, water impoundment standards, methods of reclamation and vegetative planting and "SMR-Rg-11: Water Quality" which requires the construction and maintenance by the operator of collection basins, water retaining structures, diversion ditches and silt dams. If improvement in water quality in the Tradewater and Little Sandy River basins are to be achieved, these regulations must be enforced.

At the present time, the Surface Mining Control and Reclamation Act of 1975, passed by both Houses of Congress and vetoed by the President, is under review by Congress prior to a vote to override the President's veto. Under the Act, an Office of Surface Mining Reclamation and Enforcement within the Interior Department to oversee a joint federal, state regulatory program would be established. Primary permit issuance and enforcement responsibility would rest with the states. They would have 18 months after enactment to submit a program within the bounds of federal guidelines and standards for Interior approval. If a state fails to submit an acceptable program, the federal government would establish and run a state's program.

Strip mine operators would be required to restore stripped lands to their original contour, protect topsoil, vegetative cover and assure the integrity of groundwaters. A tax would be imposed on both strip and deep mined coal to establish a reclamation fund for restoration of abandoned and reclaimed strip mines.

Additional State Statues Affecting Land Use

Deferred Tax Law for Agricultural Land (KRS 132):

In 1969, the voters in the Commonwealth approved an amendment to the Constitution which provided for the assessment of agricultural and horticultural land according to its use for those purposes. Statutory provisions were enacted in 1970 to implement the constitutional provisions which provide that if a landowner adopts another land use, he must pay a monetary penalty in the form of a higher assessment and the deferred taxes, predating the land use change for those years.

As of this time, this method of deferred taxation has not been particularly effective in achieving its original land planning purpose of preserving open space at the fringes of Kentucky's growing cities. However, provisions for strengthening the statute to achieve its original intent are currently being developed by an interim committee of the legislature.

Power Plant Siting Law (KRS 278.025):

In 1974, the Kentucky General Assembly enacted a new section of KRS 278 which requires that prior to the constructing of a facility for the generation of electricity to or for the public for consumption, a "certificate of environmental compatibility" must be obtained from the Public Service Commission.

Sanitation Districts (KRS 220.030):

Sanitation Districts may be formed in any county or across county lines to prevent and correct the pollution of streams, to regulate the flow of streams for sanitary purposes, or to provide for the collection and disposal of sewage and other liquid wastes. Cities may be included in these Districts.

Soil Conservation Districts (KRS 262.200):

Soil Conservation Districts may be formed to implement soil conservation practices at the local level. The areas of a District may cut across county lines and include cities or parts thereof.

Watershed Conservancy Districts (KRS 262.700):

Watershed Conservancy Districts may be created as subdivisions of Soil Conservation Districts to develop and execute programs pertaining to water usage, flood prevention and control, sediment damage, and erosion control.

PUBLIC PARTICIPATION

INTRODUCTION

Public participation in 303e River Basin planing is intended to involve the public in all phases of the plans development as well as the review of final conclusions. To meet this goal the public participation effort was divided into three levels. Level 1 is designed to inform the public of the background and proceedures involved in River Basin Planning, Level 2 is designed to solicit information and comments from local officials and interested parties, and Level 3 is designed to present the final report for review at public hearings.

Levels 1 and 2 have been concluded and encompass the following:

Level 1 - Meetings with Area Development District's (ADD) Board of Directors

Level 2 - Work Shop meetings within each River Basin

Level 3 of public participation will be initiated following completion of the Basin planning reports by the consultants.

The ADD meetings were arranged by the consulting engineering firms having areas of responsibility within each ADD. The workshop meetings and the public hearings were organized by the Environmental Quality Commission in cooperation with the State Department of Natural Resources & Environmental Protection. Public notice and letters to interested organizations preceeded the first two phases.

It is important that the work on the 303e River Basin plans be explained to the local officials concerned with financing and managing the ongoing water and sewer programs, to local engineers intimately associated with specific technical problems, local businesses effected by the plan, and to the general public.

The 303e Basin plan, by definition, is an ongoing plan designed to accomodate change and at a minimum is subject to total review every 5 years. Even with this built-in flexibility it is important to encourage public participation at an early stage so as to bring potential problem areas to light as early as possible.

LEGAL REQUIREMENTS

Public law 92-500 requires that prior to the adoption or any substantial revision of the Basin plan one or more public hearings be conducted. A reasonable notice of at least 30 days must preceed the date of each hearing and a record of each hearing must be kept.

PUBLIC PARTICIPATION PROCESS

Level 1

The major thrust of Level 1 of public participation was directed through the 9 Area Development Districts that have jurisdiction in the Ohio River Basin. These are:

1. Fivco ADD
2. Buffalo Trace ADD
3. Northern Kentucky ADD
4. Jefferson ADD
5. Lincoln Trail ADD
6. Green River ADD
7. Pennyrile ADD
8. Purchase ADD
9. Gateway ADD

Each ADD has the responsibility for the overall resource planning for the counties within its jurisdiction. The ADD's are run by an executive director answerable to a board of directors representing each participating county.

Level 1 constituted visiting each ADD during a monthly Board of Directors' meeting and presenting a brief overview of the scope and purpose of 303e planning and its interaction with other planning efforts such as 201 and 208 studies. These meetings were designed to make initial contact with the local people, expose any general problems of current concern and establish a format for future discussion on specific matters of concern.

The major question at the ADD meetings was the interaction between the 303e plans, and the 201 and 208 plans. It was emphasised that these three plans established under Public Law 92-500 were to form the framework for state planning. The 303e is the statewide water quality management plan which identifies 201 and 208 needs and orders their priorities. The 201 and 208 studies deal with specific facilities and areas under the broad guidance of the 303e plan.

Level 2

Level 2 of the public participation effort consisted of workshops organized by River Basins. The intent of the workshops was to familiarize the public with the legislative background for the River Basin planning, Public Law 92-500, the approach the State of Kentucky is taking in fulfilling the requirements of the law, the major elements of 303e planning, and the preliminary findings.

The work shops were coordinated by the Environmental Quality Commission and designed to encourage public input regarding local water pollution control problems and conerns, and to identify interest of citizens willing to follow the progress of 303e planning and offer suggestions and guidance from a local level.

The State Department of Natural Resources and Environmental Protection was present at each meeting to record the proceedings and participate when appropriate (recordings of the workshops are available at the Department of Natural Resources and Environmental Protection).

Information packets distributed at these meetings were intended to be taken home and serve as the basis for further involvement.

The major concerns at the workshop were the costs involved especially to smaller communities, the factors effecting the priority system, the effect and interaction of land use planning and the responsibility for enforcement.

Representatives from the State Department of Natural Resources explained the concept of the Kentucky Pollution Abatement Authority and its interest in seeking effective water pollution control that is also economically realistic. Mention was also made of the National Commission on Water Quality and the effect its findings might have on the future of pollution control. There was expressed concern that population would have a disproportionately large influence on the priority system. In response to this the segment priority system and the municipal priority system was explained. The land use information in the report was discussed with particular attention to how it related to nonpoint source discharges and any possible federal land use legislation. It was explained that the responsibility of enforecement is in the hands of governmental agencies such as the Department of Natural Resources and Environmental Protection (DNREP) on the state level. The efforts by the River Basin consultants and by the state officials to organize the DNREP so that it can best serve the local interests and monitor the water quality throughout the state was reviewed. The current thinking of decetralizing the DNREP and moving its resources from Frankfort out into the River Basins was also discussed.

BACKGROUND DATA

INTRODUCTION

Appendix A contains the water quality and planning data used as the basis upon which the Basinwide Water Quality Management Plan is developed.

Water quality data are presented in Exhibit A-1t and is obtained primarily from the EPA STORET data file, U.S. Geological Survey publications, and ORSANCO reports. Additional water quality data are presented in Exhibit B-1.3t in Appendix B and supplements that in Exhibit A-1t. Population and housing disaggregation data are presented in Exhibits A-2t and A-3t respectively. Additional population and housing data are presented respectively in Exhibits 3.5t and 3.6t in Chapter III. Segment population and housing data are presented in Exhibit B-1.2t.

Employment disaggregation data for county and Area Development Districts are presented respectively in Exhibits A-4t and A-5t. Additional employment data are presented in Exhibit 3.7t in Chapter III and supplements those in Exhibits A-4t and A-5t. Disaggregation of land use and land surface area data are presented respectively in Exhibits A-6t and A-7t, and are the basis for land use data presented in Exhibit 3.8t in Chapter III.

EXHIBIT A-1t WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH$_3$-N Total (mg/L)	DO (mg/L)	Temp. (^{o}C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 06004 Station Location: East Fork Little Sand River at Argillite, KY.	9/10/70	-	-	23.0	6.9	-	7.1	-
Segment Number 06007 Station Location: Little Sandy River at Grayson, KY.	9/10/70	-	-	22.0	7.0	-	40	-
Segment Number 06011 Station Location: Little Sandy River below Grayson Dam near Leon, KY.	9/10/70	-	-	15.0	6.6	-	32	-
Segment Number 08035 Station Location: Sinking Creek near Lodiburg, KY.	10/13/71	-	-	16.0	8.1	0.04	14.0	-
Segment Number 08050 Station Location: Harrods Creek at US HWY 42 Bridge	9/19/72	0.42	1.3	22.0	7.1	-	-	-
	9/20/72	0.35	1.7	24.0	7.4	-	-	-
	9/21/72	0.39	2.1	25.0	7.4	-	-	-
	9/23/72	0.47	2.0	22.0	7.4	-	-	-
Segment Number 10001 Station Location: Tradwater at KY 365 near Sturgis	10/31/67	-	7.4	13.0	5.5	-	-	-
	11/2/67	-	7.3	11.0	3.6	-	-	-
	11/3/67	-	7.5	11.0	3.8	-	-	-
	11/8/67	-	10.2	-	5.5	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 10004 Station Location: Craborchard Cr near Clay	10/31/67	-	6.8	13.0	7.3	-	-	Total Coliform (MF/100ml) 2,400
Station Location: Vaugn Creek near Blackford	11/2/67	-	8.0	12.0	5.4	-	-	Total Coliform (MF/100ml) 3,000
Segment Number 10005 Station Location: Tradewater River at US-60 near Blackford	10/30/67	-	8.9	9.0	5.2	-	-	-
	10/31/67	-	7.4	13.0	5.5	-	-	-
Station Location: Tradewater River at KY 132, Blackford	10/30/67	-	8.9	9.0	4.2	-	-	-
	10/31/67	-	7.4	13.0	3.5	-	-	-
	11/1/67	-	7.2	11.0	3.6	-	-	-
	11/2/67	-	7.2	12.0	3.3	-	-	-
	11/3/67	-	7.8	12.0	3.6	-	-	-
	5/7/68	-	7.4	16.0	5.7	-	-	-
Station Location: Tradewater River at KY 120 near Providence	10/30/67	-	9.4	12.0	4.3	-	-	-
	10/31/67	-	7.8	13.0	3.6	-	-	-
	11/1/67	-	7.0	11.0	5.1	-	-	-
	11/2/67	-	7.6	11.0	3.3	-	-	-
	11/3/67	-	4.7	12.0	3.5	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Tradewater River at county road near Providence	10/16/71	-	6.5	16.0	3.1	-	-	-
	10/17/67	-	6.1	18.0	4.0	-	-	-
	10/18/67	-	6.9	16.0	3.1	-	-	-
	10/19/67	-	7.4	13.0	3.5	-	-	-
	4/26/68	-	7.7	16.0	5.7	-	-	-
Station Location: Tradewater River near Providence	4/23/68	-	7.0	18.0	6.7	-	-	-
Segment Number 10010 Station Location: Tradewater River at Olney, KY.	9/17/70	-	-	22.0	7.0	272.0	-	-
	9/1/71	-	-	21.5	6.6	-	-	-
	9/6/72	-	-	23.5	7.3	-	-	-
Station Location: Tradewater River at KY 1220 at Olney	6/14/67	-	6.2	25.0	4.4	-	-	-
	10/16/67	-	5.2	16.0	4.3	-	-	-
	10/17/67	-	7.1	18.0	4.6	-	-	-
	10/18/67	-	3.7	15.0	4.6	-	-	-
	4/11/68	0.015	8.1	13.0	5.6	-	-	-
	4/12/68	0.01	8.5	13.0	5.9	-	-	-
Station Location: Tradewater River at county road near Quinn	10/13/67	-	6.6	16.0	4.7	-	-	-
	10/16/67	-	6.6	16.0	4.7	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Tradewater River at KY 70 near Fryer	10/16/67	–	4.7	16.0	5.7	–	–	–
	10/17/67	–	5.3	17.0	5.3	–	–	–
	10/19/67	–	6.7	13.0	5.1	–	–	–
Segment Number 10012 Station Location: Tradewater River at US 62, Dawson Springs	6/2/67	–	8.9	19.0	5.0	–	–	–
	10/16/67	–	4.2	16.0	3.5	–	–	–
	10/17/67	–	7.4	18.0	4.1	–	–	–
	10/18/67	–	7.2	15.0	3.4	–	–	–
	10/19/67	–	8.0	12.0	3.2	–	–	–
Segment Number 10014 Station Location: Tradewater River at KY 109, Dawson Springs	6/2/67	–	7.0	18/0	3.8	–	–	–
	10/16/67	–	4.9	16.0	3.3	–	–	–
	10/17/67	–	4.0	18.0	3.2	–	–	–
	10/18/67	–	5.4	15.0	3.2	–	–	–
	10/19/67	–	5.6	12.0	3.3	–	–	–
Station Location: Tradewater River at county road near St. Charles	9/26/67	–	4.6	14.0	7.3	–	–	–
	9/27/67	–	4.7	17.0	7.8	–	–	–
Station Location: Tradewater River at county road near Kelly	9/28/67	–	4.1	13.0	7.6	–	–	–

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 11001 Station Location: Tygarts Creek near Greenup, KY	9/10/70	-	-	24.0	7.3	-	3.3	-
Segment Number 11006 Station Location: Tygarts Creek at Olive Hill, KY	9/11/70	-	-	19.5	7.0	-	7.5	
Segment Number 08200 Station Location: Ohio River below mouth of Big Sandy River	10/23/68	1.9	4.0	20.0	6.8	-	-	-
	9/17/69	1.15	4.5	25.0	6.9	-	-	-
	6/16/71	0.2	7.2	19.7	5.8	-	-	-
Segment Number 08201 Station Location: Ohio River at Ironton, Ohio	8/19/69	0.63	3.8	26.0	6.9	-	-	-
Segment Number 08204 Station Location: Ohio River below Portsmouth, Ohio	8/19/69	0.6	4.7	26.5	6.8	-	-	-
Station Location: Ohio River above Greenup Dam	8/19/69	0.68	3.4	27.0	6.9	-	-	-
	9/24/69	0.79	4.5	23.0	6.9	-	-	-
Segment Number 08205 Station Location: Ohio River at Maysville	8/19/69	0.4	4.0	26.5	7.2	-	91,000	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08207 Station Location: Ohio River at Cincinnati	6/22/60	0.1	4.9	24.8	7.4	-	-	-
	7/6/60	0.1	4.5	23.7	7.2	-	-	-
	9/7/60	0.1	8.5	28.7	8.7	-	-	-
	6/14/61	0.0	4.9	22.8	7.0	-	-	-
	9/20/61	0.1	9.0	25.3	9.1	-	-	-
	8/7/63	0.2	2.6	27.7	7.0	-	-	-
	9/23/64	0.0	4.4	25.3	7.3	-	-	-
	10/21/64	1.6	4.5	16.7	7.0	-	-	-
	6/30/65	0.1	4.8	27.1	7.3	-	-	-
	7/14/65	0.1	4.9	27.4	7.3	-	-	-
	7/21/65	0.1	4.0	27.8	7.2	-	-	-
	8/4/65	0.1	4.6	26.0	7.3	-	-	-
	8/18/65	0.1	4.9	28.2	7.4	-	-	-
	8/25/65	0.1	4.3	27.2	7.4	-	-	-
	9/1/65	0.1	4.6	25.5	7.5	-	-	-
	9/8/65	0.1	4.5	25.0	7.3	-	-	-
	9/15/65	0.1	4.1	24.8	7.1	-	-	-
	9/22/65	0.1	4.4	25.3	7.1	-	-	-
	10/20/65	0.2	4.7	19.8	7.1	-	-	-
	10/27/65	0.4	4.3	17.0	7.2	-	-	-
	8/19/69	1.1	4.5	23.0	7.3	-	-	-
	5/20/71	0.03	4.2	17.0	7.3	-	-	-
	1/74	-	11.7	6.7	7.1	-	282,000	Cl 30mg/L
	3/74	-	11.1	8.9	7.1	-	206,000	Cl 20mg/L
	4/74	-	10.6	12.2	7.1	-	190,000	Cl 20mg/L
	5/74	-	8.5	18.3	7.0	-	121,000	Cl 25mg/L
	6/74	-	7.3	21.7	7.0	-	142,000	Cl 30mg/L
	7/74	-	7.8	25.6	7.1	-	53,000	Cl 30mg/L
	9/74	-	7.2	22.8	7.1	-	77,000	Cl 30mg/L

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH$_3$-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Meldahl Dam	1/15/69	0.33	2.7	3.0	6.6	-	-	-
	8/19/69	0.5	4.4	26.0	7.1	-	-	-
Segment Number 08209 Station Location: Ohio River at Miami Fort, Ohio	8/20/69	0.34	-	-	7.1	-	-	-
	10/22/69	0.5	4.2	15.5	7.1	-	-	-
	9/23/70	0.26	4.0	27.5	7.6	-	-	-
	9/25/73	0.33	4.9	24.0	7.3	-	-	-
	1/74	-	11.8	5.6	7.1	-	282,000	Cl 25mg/L
	3/74	-	10.8	9.4	7.5	-	206,000	Cl 20mg/L
	4/74	-	10.3	13.3	7.5	-	190,000	Cl 20mg/L
	5/74	-	7.9	20.0	7.1	-	121,000	Cl 30mg/L
	6/74	-	6.9	22.2	7.1	-	142,000	Cl 30mg/L
	7/74	-	6.5	26.7	7.1	-	53,000	Cl 20mg/L
	9/74	-	6.2	22.8	7.3	-	77,000	Cl 30mg/L
Station Location: Ohio River at Andersons Ferry	8/21/69	0.4	4.2	26.0	7.3	-	-	-
Segment Number 08210 Station Location: Ohio River at Markland Dam	9/12/68	0.07	4.0	22.0	7.7	-	-	-
	6/19/69	0.6	4.5	23.0	7.5	-	-	-
	8/21/69	0.13	3.4	28.0	7.4	-	-	-
	9/25/69	0.06	4.3	23.5	7.1	-	-	-
	9/23/70	0.31	2.3	27.0	7.4	-	-	-
	10/14/70	0.48	4.4	20.0	7.4	-	-	-
	10/21/71	-	-	-	-	-	26,600	-
	11/23/71	-	-	-	-	-	29,700	-
	12/14/71	-	-	-	-	-	134,000	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH$_3$-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	1/7/72	-	-	-	-	-	280,000	-
	2/17/72	-	-	-	-	-	238,000	-
	5/18/72	-	-	-	-	-	172,000	-
	7/7/72	-	-	-	-	-	191,000	-
	8/11/72	-	-	-	-	-	30,000	-
	8/30/72	0.14	4.5	26.0	-	-	-	-
	7/11/73	0.09	4.6	27.0	-	-	-	-
	9/5/73	0.03	3.0	28.0	-	-	-	-
	1/74	-	10.9	5.6	7.3	-	295,000	Cl 30mg/L
	3/74	-	11.0	9.4	7.3	-	212,000	Cl 15mg/L
	4/74	-	9.5	13.3	7.3	-	200,000	Cl 25mg/L
	5/74	-	7.7	18.9	7.1	-	125,000	Cl 25mg/L
	6/74	-	5.8	21.7	7.0	-	148,000	Cl 20mg/L
	7/74	-	5.7	25.6	7.5	-	55,000	Cl 25mg/L
	9/74	-	5.3	23.3	7.3	-	86,000	Cl 30mg/L
Segment Number 08211 Station Location: Ohio River at Notch Lick Light	9/19/72	0.29	4.6	27.0	7.1	-	-	-
	9/19/72	-	4.4	26.0	7.1	-	-	-
	9/19/72	-	4.5	26.0	7.1	-	-	-
	9/19/72	0.29	4.2	26.0	7.1	-	-	-
	9/19/72	-	4.2	26.0	7.1	-	-	-
	9/19/72	-	4.0	26.0	7.1	-	-	-
	9/19/72	0.27	4.4	26.0	7.2	-	-	-
	9/19/72	-	4.2	26.0	7.2	-	-	-
Station Location: Ohio River at 1.5 mi. below M & T Chem. Eff.	9/19/72	-	4.7	26.0	7.2	-	-	-
	9/19/72	0.28	4.9	26.0	7.2	-	-	-
	9/19/72	0.29	4.8	26.0	7.2	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at M & T Chem. Eff.								
	9/22/72	30.0	-	-	-	-	-	-
	9/23/72	36.0	-	20.0	7.6	-	-	-
Station Location: Ohio River at Minnet Run Light								
	9/19/72	-	4.7	26.0	7.2	-	-	-
	9/19/72	-	4.9	26.0	7.2	-	-	-
	9/20/72	-	4.9	25.0	7.1	-	-	-
	9/20/72	-	4.9	26.0	7.1	-	-	-
	9/20/72	-	4.9	26.0	7.1	-	-	-
Station Location: Ohio River at Lindenburn								
	9/19/72	-	4.8	26.0	7.2	-	-	-
	9/19/72	-	4.8	26.0	7.1	-	-	-
	9/20/72	-	4.9	25.0	7.2	-	-	-
	9/20/72	-	4.9	25.0	7.1	-	-	-
	9/22/72	-	4.9	24.0	7.2	-	-	-
Station Location: Ohio River at 0.8 mi. below Markland Dam								
	9/20/72	-	4.9	25.0	7.0	-	-	-
	9/20/72	-	4.9	25.0	7.1	-	-	-
	9/20/72	-	4.9	25.0	7.1	-	-	-
	9/20/72	-	4.7	25.0	7.2	-	-	-
	9/20/72	-	4.8	25.0	7.1	-	-	-
	9/20/72	-	4.7	25.0	7.1	-	-	-
	9/22/72	0.21	4.9	24.0	7.2	-	-	-
Segment Number 08212								
Station Location: Ohio River at Madison, Ind.								
	9/12/68	0.05	4.0	24.0	7.3	-	-	-
	6/19/69	0.33	4.2	23.0	7.5	-	-	-
	8/21/69	0.25	4.3	28.5	7.4	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	9/25/69	0.05	4.8	23.5	7.2	-	-	-
	9/23/70	0.06	3.2	26.0	7.5	-	-	-
	9/5/73	0.02	4.5	28.0	-	-	-	-
	10/10/73	1.97	4.0	22.5	-	-	-	-
	11/14/73	34.0	-	-	-	-	-	-
Station Location: Ohio River at Oldham County Intake	9/19/72	-	4.8	26.0	7.1	-	-	-
	9/19/72	-	4.6	26.0	7.1	-	-	-
	9/19/72	-	4.7	26.0	7.1	-	-	-
	9/19/72	-	4.8	26.0	7.1	-	-	-
	9/21/72	0.04	4.9	26.0	7.1	-	-	-
	9/21/72	-	4.9	26.0	7.1	-	-	-
Station Location: Ohio River at Charlestown, Ind. STP Eff.	9/20/72	27.0	-	-	-	-	-	-
Station Location: Ohio River at Hanover, Ind. STP Eff.	9/20/72	22.0	-	-	-	-	-	-
Station Location: Ohio River at Madison, Ind. STP Eff.	9/20/72	20.0	-	-	-	-	-	-
	9/21/72	20.5	-	-	-	-	-	-
Segment Number 08213 Station Location: Ohio River at Louisville	6/22/70	-	4.5	25.6	7.5	-	-	-
	9/1/70	-	4.6	27.0	-	-	-	-
	9/1/70	-	4.7	27.0	-	-	-	-
	9/1/70	-	4.6	27.0	-	-	-	-
	9/15/70	0.05	2.6	26.0	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	8/28/71	0.04	4.8	25.2	7.6	-	-	-
	8/28/71	-	4.8	25.1	7.6	-	-	-
	8/28/71	-	4.9	25.1	7.4	-	-	-
	9/13/71	-	4.6	25.5	7.3	-	-	-
	9/14/71	0.02	4.4	24.0	7.3	-	-	-
	9/14/71	-	4.4	24.5	7.3	-	-	-
	9/14/71	-	4.3	24.5	7.3	-	-	-
	9/16/71	-	3.6	24.5	-	-	-	-
	9/16/71	-	3.6	24.5	-	-	-	-
	9/16/71	-	3.3	24.5	-	-	-	-
	9/16/71	-	4.5	24.0	-	-	-	-
	9/16/71	-	4.6	24.0	-	-	-	-
	9/16/71	-	4.6	24.5	-	-	-	-
	1/5/72	70.0	11.0	6.0	-	-	-	-
	7/11/73	0.04	4.9	25.0	-	-	-	-
	10/10/73	0.04	4.3	21.0	-	-	-	-
Station Location: Ohio River below Indiana Army Ammunition Plant	9/20/72	-	4.6	26.0	7.2	-	-	-
	9/20/72	-	4.7	26.0	7.2	-	-	-
	9/20/72	-	4.7	26.0	7.2	-	-	-
	9/20/72	-	4.7	27.0	7.2	-	-	-
	9/20/72	-	4.6	26.0	7.2	-	-	-
	9/23/72	0.06	4.9	25.0	7.1	-	-	-
	9/23/72	-	4.7	25.0	7.1	-	-	-
	9/23/72	-	4.9	25.0	7.0	-	-	-
	1/74	-	11.3	6.7	-	-	321,000	Cl 15mg/L
	3/74	-	10.4	8.9	7.5	-	227,000	Cl 10mg/L
	4.74	-	9.4	12.8	7.3	-	210,000	Cl 15mg/L
	5/74	-	7.0	18.9	7.2	-	121,000	Cl 20mg/L
	6/74	-	5.8	21.7	7.2	-	157,000	Cl 20mg/L
	7/74	-	5.5	25.6	7.2	-	53,000	Cl 25mg/L
	9/74	-	6.5	22.2	7.3	-	94,000	Cl 25mg/L

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Oak Park Conservation Dist. Eff.	9/20/72	28.0	-	-	-	-	-	-
Segment Number 08214 Station Location: Ohio River at American Synthetic Rubber Co.	6/15/70	37.0	-	30.0	-	-	-	-
	8/22/70	56.5	-	-	-	-	-	-
	8/22/70	76.0	-	32.0	-	-	-	-
	9/29/70	7.0	-	-	-	-	-	-
	9/30/70	110.0	-	-	-	-	-	-
	9/30/70	97.0	-	-	-	-	-	-
	10/1/70	72.0	-	-	-	-	-	-
	10/1/70	56.0	-	-	-	-	-	-
	10/1/70	110.0	-	31.0	-	-	-	-
	10/1/70	130.0	-	30.0	-	-	-	-
	10/2/70	97.0	-	28.0	-	-	-	-
	10/2/70	96.0	-	30.0	-	-	-	-
	10/2/70	105.0	-	-	-	-	-	-
	9/7/71	39.0	-	-	8.0	-	-	-
	9/8/71	38.0	-	-	7.2	-	-	-
	9/10/71	38.0	-	-	7.0	-	-	-
	9/11/71	39.0	-	-	7.4	-	-	-
Station Location: Ohio River at New Albany STP	8/10/70	17.5	-	-	-	-	-	-
	8/11/70	20.0	-	-	-	-	-	-
	8/12/70	13.0	-	-	-	-	-	-
	8/13/70	23.0	-	-	-	-	-	-
	8/14/70	23.0	-	-	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	NH3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Rohm & Hass 002 Cooling Water Dis.	9/1/71	0.36	-	31.0	11.0	-	-	-
Station Location: Ohio River at R & H 001 Equilization Pond	9/3/71	-	-	27.0	5.9	-	-	-
Station Location: Ohio River at Dupont 008 Fly Ash Pond Eff.	9/7/71	-	-	26.0	11.3	-	-	-
	9/8/71	-	-	26.0	11.1	-	-	-
Station Location: Ohio River at Dupont 002 Cooling Water	9/8/71	-	-	28.0	9.2	-	-	-
Station Location: Ohio River at Dupont 005 Cooling Water	9/7/71	-	-	30.5	8.6	-	-	-
	9/8/71	-	-	32.5	10.1	-	-	-
Station Location: Ohio River at Dupont 006 Main Eff. & Pond	9/7/71	-	-	32.0	3.6	-	-	-
	9/8/71	-	-	32.0	2.8	-	-	-
	9/9/71	-	-	32.0	2.5	-	-	-
	9/10/71	-	-	32.5	2.1	-	-	-
Station Location: Ohio River at Dupont 001 Storm Sewer East	9/8/71	-	-	28.0	8.9	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Louisville STP Eff.								
	8/10/70	6.8	–	–	–	–	–	–
	8/11/70	20.0	–	–	–	–	–	–
	8/12/70	19.5	–	–	–	–	–	–
	8/13/70	16.0	–	–	–	–	–	–
	8/14/70	30.5	–	–	–	–	–	–
	9/29/70	11.0	–	–	–	–	–	–
	9/29/70	13.0	–	–	–	–	–	–
	9/30/70	12.0	–	–	–	–	–	–
	10/1/70	11.0	–	–	–	–	–	–
	10/1/70	11.0	–	–	–	–	–	–
	10/2/70	18.0	–	–	–	–	–	–
Segment Number 08215								
Station Location: Ohio River above mouth of Salt River								
	10/8/69	0.23	4.3	20.0	6.1	–	–	–
Station Location: Ohio River 0.4 mi. above Salt River Conf.								
	8/28/71	–	4.7	26.2	7.7	–	–	–
	8/28/71	–	4.8	26.2	–	–	–	–
	8/28/71	–	4.7	26.1	–	–	–	–
	9/13/71	–	4.3	25.5	7.3	–	–	–
	9/13/71	–	4.3	25.0	–	–	–	–
	9/13/71	–	4.5	24.5	–	–	–	–
	9/13/71	–	4.5	25.0	7.3	–	–	–
	9/13/71	–	4.5	25.0	–	–	–	–
	9/13/71	–	4.7	24.5	–	–	–	–
	9/13/71	–	4.7	25.0	–	–	–	–
	9/14/71	–	4.4	25.5	7.3	–	–	–
	9/14/71	–	4.2	25.5	–	–	–	–
	9/14/71	–	4.2	25.5	–	–	–	–

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	9/14/71	-	4.6	-	-	-	-	-
Station Location: Ohio River 8 mi. below Louisville Complex								
	9/13/71	-	4.2	25.0	7.2	-	-	-
	9/13/71	-	4.6	25.0	-	-	-	-
	9/13/71	-	4.7	24.5	7.2	-	-	-
	9/13/71	-	4.6	23.0	-	-	-	-
	9/13/71	-	4.9	25.0	-	-	-	-
	9/14/71	-	4.6	25.5	7.3	-	-	-
	9/14/71	-	4.6	25.5	-	-	-	-
	9/14/71	-	4.5	-	-	-	-	-
	9/16/71	-	4.9	24.5	-	-	-	-
Station Location: Ohio River 3.4 mi. below Louisville Complex								
	9/13/71	0.14	4.1	24.0	7.8	-	-	-
	9/13/71	-	4.5	25.0	-	-	-	-
	9/13/71	-	4.5	24.5	-	-	-	-
	9/13/71	0.08	4.6	24.5	7.4	-	-	-
	9/13/71	-	4.6	25.0	-	-	-	-
	9/13/71	-	4.9	24.5	-	-	-	-
	9/13/71	-	4.7	25.0	-	-	-	-
	9/13/71	-	4.7	23.0	-	-	-	-
	9/14/71	0.08	4.6	25.5	7.1	-	-	-
	9/14/71	-	4.8	24.5	-	-	-	-
	9/14/71	-	4.6	-	-	-	-	-
Station Location: Ohio River at Cane Run								
	8/12/70	2.1	4.4	26.0	-	-	-	-
	8/22/70	2.1	3.8	28.5	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	8/22/70	1.0	4.4	27.5	–	–	–	–
	9/15/70	1.5	1.2	26.0	–	–	–	–
	9/15/70	0.78	2.3	26.0	–	–	–	–
	9/14/70	0.09	2.7	26.0	–	–	–	–
	9/15/70	0.04	3.1	26.0	–	–	–	–
	10/13/70	–	4.8	21.0	–	–	–	–
	7/7/71	–	3.0	28.0	–	–	–	–
	7/12/71	–	4.5	27.0	–	–	–	–
	7/14/71	–	3.7	27.0	–	–	–	–
	7/20/71	–	4.7	27.0	–	–	–	–
	7/26/71	–	4.4	27.0	–	–	–	–
	7/28/71	–	4.2	26.0	–	–	–	–
	8/2/71	–	4.0	26.0	–	–	–	–
	8/10/71	0.08	4.6	26.0	–	–	–	–
	8/10/71	0.19	3.9	26.0	–	–	–	–
	8/27/71	0.25	5.3	26.0	9.2	–	–	–
	9/13/71	0.25	3.8	25.0	7.1	–	–	–
	9/14/71	0.03	4.9	25.0	7.2	–	–	–
	9/16/71	–	4.6	24.5	–	–	–	–
	8/30/72	0.46	4.6	27.0	–	–	–	–
	7/11/73	0.08	3.6	26.0	–	–	–	–
	8/8/73	0.17	3.1	29.0	–	–	–	–
	9/5/73	0.29	2.2	27.0	–	–	–	–
	10/10/73	0.41	1.6	24.0	–	–	–	–
	1/74	–	12.5	6.1	7.1	–	321,000	–
	3/74	–	12.2	9.4	7.2	–	227,000	–
	4/74	–	9.7	12.8	7.2	–	210,000	–
	5/74	–	8.6	19.4	7.3	–	121,000	–
	6/74	–	6.7	22.2	7.3	–	157,000	–
	7/74	–	5.3	26.1	7.2	–	53,000	–
	9/74	–	6.6	22.8	7.3	–	94,000	–

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (^{o}C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at 0.4 mi. below Cane Run	8/24/71	-	4.7	26.5	-	-	-	-
	8/24/71	-	4.6	26.5	-	-	-	-
	8/27/71	0.25	5.3	26.0	9.2	-	-	-
	9/13/71	0.25	3.8	25.0	7.1	-	-	-
	9/13/71	-	3.9	25.0	-	-	-	-
	9/13/71	-	3.2	25.0	-	-	-	-
	9/14/71	0.03	4.9	25.0	7.2	-	-	-
	9/14/71	-	4.9	25.0	-	-	-	-
	9/14/71	-	4.9	24.5	-	-	-	-
	9/14/71	-	4.8	-	-	-	-	-
	9/16/71	-	4.6	24.5	-	-	-	-
	9/16/71	-	4.4	24.5	-	-	-	-
	9/16/71	-	4.5	24.5	-	-	-	-
Station Location: Ohio River at Shively, KY. Municipal STP Eff.	9/1/71	29.0	-	-	-	-	-	-
	9/2/71	30.0	-	-	-	-	-	-
Station Location: Ohio River at Stauffer 002 Acid Waste	8/31/71	-	-	143.0	-	-	-	-
	9/8/71	-	-	138.0	-	-	-	-
Station Location: Ohio River at Stauffer 001 Waste Discharge	8/30/71	-	-	22.5	9.3	-	-	-
	8/31/71	-	-	26.0	9.3	-	-	-
	9/7/71	-	-	22.0	11.3	-	-	-
	9/11/71	-	-	21.0	11.8	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08216								
Station Location: Ohio River at 0.9 mi. below Olin	8/26/71	-	4.6	27.9	-	-	-	-
	8/26/71	-	4.6	27.9	-	-	-	-
	9/14/71	0.09	4.8	25.5	7.2	-	-	-
	9/14/71	-	4.5	26.0	-	-	-	-
	9/14/71	-	4.7	26.0	-	-	-	-
	9/14/71	0.09	4.8	26.0	7.3	-	-	-
	9/14/71	-	4.8	26.0	-	-	-	-
	9/14/71	-	4.5	26.0	-	-	-	-
	9/14/71	0.08	4.7	26.0	7.2	-	-	-
	9/14/71	-	4.5	26.0	-	-	-	-
Station Location: Ohio River at Olin Mathieson	10/21/70	-	-	38.0	-	-	-	-
	10/21/70	-	-	38.0	-	-	-	-
	10/21/70	-	-	38.0	-	-	-	-
	10/22/70	-	-	37.5	-	-	-	-
Station Location: Ohio River at Olin 003 Cooling Tower Blo.	9/16/71	-	-	29.5	8.9	-	-	-
Station Location: Ohio River at Olin 001 Main Discharge	9/13/71	-	-	38.0	11.3	-	-	-
	9/14/71	-	-	39.0	11.2	-	-	-
	9/15/71	-	-	38.0	10.9	-	-	-
	9/16/71	-	-	38.0	11.1	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at 1.5 mi. above Olin Corp.	9/14/71	-	4.9	25.5	-	-	-	-
	9/14/71	-	4.8	25.5	-	-	-	-
	9/14/71	-	4.8	26.0	-	-	-	-
	9/14/71	-	4.6	25.5	-	-	-	-
	9/14/71	-	4.7	26.0	-	-	-	-
Station Location: Ohio River at 0.3 miles below L & D 43	8/26/71	-	4.4	27.3	7.4	-	-	-
	8/26/71	-	4.3	27.3	-	-	-	-
Station Location: Ohio River at 2.1 mi. below Salt River	8/28/71	0.07	4.9	26.4	7.6	-	-	-
	8/28/71	-	4.9	26.3	-	-	-	-
	8/28/71	-	4.9	26.0	-	-	-	-
	9/13/71	0.18	4.2	23.5	7.3	-	-	-
	9/13/71	-	4.1	24.0	-	-	-	-
	9/13/71	0.11	4.4	24.0	7.3	-	-	-
	9/13/71	-	4.4	24.0	-	-	-	-
	9/13/71	-	4.8	24.0	-	-	-	-
	9/14/71	0.11	4.8	25.5	7.3	-	-	-
	9/14/71	-	4.3	25.5	-	-	-	-
	9/14/71	-	4.5	25.5	-	-	-	-
	9/14/71	-	4.6	26.0	-	-	-	-
	9/14/71	-	4.3	-	-	-	-	-
Station Location: Ohio River at West Point, KY Municipal STP Eff.	9/1/71	31.0	-	-	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08217								
Station Location: Ohio River at 1.4 mi. below Western Kraft	9/15/71	-	4.1	25.5	-	-	-	-
	9/15/71	0.11	4.7	26.0	7.5	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.7	25.0	-	-	-	-
Station Location: Ohio River at Western Kraft	10/20/70	-	0.5	15.5	-	-	-	-
	10/20/70	-	0.3	16.5	-	-	-	-
	10/20/70	-	1.6	17.5	-	-	-	-
	10/21/70	-	1.5	15.0	-	-	-	-
	10/21/70	-	0.7	16.0	-	-	-	-
	10/21/70	-	0.8	17.0	-	-	-	-
	10/21/70	-	0.8	17.0	-	-	-	-
	10/22/70	-	0.5	14.0	-	-	-	-
	10/22/70	-	0.6	14.0	-	-	-	-
	10/22/70	-	0.35	15.5	-	-	-	-
	10/22/70	-	0.35	17.0	-	-	-	-
	10/22/70	-	0.7	21.0	-	-	-	-
	10/23/70	-	0.9	15.0	-	-	-	-
	10/23/70	-	0.7	15.0	-	-	-	-
Station Location: Ohio River at 0.4 mi. above Western Kraft	8/29/71	-	4.9	26.5	-	-	-	-
	8/29/71	-	4.9	26.5	-	-	-	-
	8/29/71	-	4.7	26.5	-	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH$_3$-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
Station Location: Ohio River at 1.2 mi. below Cloverport STP	8/29/71	-	4.9	26.5	-	-	-	-
	9/15/71	-	4.8	25.5	7.5	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.6	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	7.5	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.6	25.5	-	-	-	-
	9/15/71	-	4.8	25.5	7.6	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
Station Location: Ohio River at 0.5 mi. above Cloverport STP	9/15/71	-	4.7	26.0	7.4	-	-	-
	9/15/71	-	4.5	26.0	-	-	-	-
	9/15/71	-	4.6	26.0	-	-	-	-
	9/15/71	-	4.7	26.0	7.4	-	-	-
	9/15/71	-	4.8	26.0	-	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.9	26.0	7.5	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.6	25.5	-	-	-	-
Station Location: Ohio River at 2.1 mi. above L & D 45	8/25/71	-	4.9	27.5	-	-	-	-
	9/15/71	-	4.5	25.5	7.2	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.6	25.5	7.2	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
	9/15/71	-	4.4	25.0	-	-	-	-
	9/15/71	-	4.7	25.5	7.2	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
	9/15/71	-	4.5	25.0	-	-	-	-
Station Location: Ohio River at Flint Isle Light	9/15/71	-	4.9	25.5	7.2	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
	9/15/71	-	4.4	25.5	-	-	-	-
	9/15/71	-	4.5	25.5	7.3	-	-	-
	9/15/71	-	4.4	25.5	-	-	-	-
	9/15/71	-	4.3	25.5	-	-	-	-
	9/15/71	-	4.5	25.5	7.2	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
Station Location: Ohio River at 14 mi. below Leavenworth STP	8/25/71	-	4.9	27.2	-	-	-	-
	9/15/71	-	4.6	25.0	7.3	-	-	-
	9/15/71	-	4.3	25.0	-	-	-	-
	9/15/71	-	4.4	25.5	-	-	-	-
	9/15/71	-	4.6	25.5	7.3	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
	9/15/71	-	4.5	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	7.3	-	-	-
	9/15/71	-	4.6	25.5	-	-	-	-
	9/15/71	-	4.3	25.5	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at 3.3 mi. below Leavenworth STP	9/15/71	-	4.7	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	7.2	-	-	-
	9/15/71	-	4.4	25.5	-	-	-	-
	9/15/71	-	4.9	25.0	-	-	-	-
	9/15/71	-	4.7	25.5	7.2	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
	9/15/71	-	4.7	25.5	-	-	-	-
Station Location: Ohio River at 0.3 mi. below L & D 44	9/15/71	-	4.9	25.5	7.4	-	-	-
	9/15/71	-	4.8	25.5	-	-	-	-
	9/15/71	-	4.7	25.0	-	-	-	-
	9/15/71	-	4.9	25.5	7.3	-	-	-
	9/15/71	-	4.9	24.5	-	-	-	-
Station Location: Ohio River at 0.5 mi. below Brandenburg	8/26/71	-	4.6	28.0	7.2	-	-	-
	8/26/71	-	4.9	28.0	-	-	-	-
	8/26/71	-	4.7	27.9	-	-	-	-
	8/26/71	-	4.5	27.5	7.2	-	-	-
	8/26/71	-	4.9	27.4	-	-	-	-
	8/26/71	-	4.8	27.5	-	-	-	-
	8/26/71	-	4.8	27.3	7.2	-	-	-
	8/26/71	-	4.8	27.1	-	-	-	-
	9/14/71	-	4.8	26.0	7.2	-	-	-
	9/14/71	-	4.9	26.0	-	-	-	-
	9/14/71	-	4.9	26.0	7.2	-	-	-
	9/14/71	-	4.4	26.0	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	9/14/71	-	4.6	26.0	7.2	-	-	-
	9/14/71	-	4.8	26.0	-	-	-	-
	9/14/71	-	4.7	26.0	-	-	-	-
Station Location: Ohio River at Brandenburg	6/25/69	-	4.5	28.5	-	-	-	-
	8/10/70	0.82	4.9	26.0	-	-	-	-
	9/15/70	0.32	4.5	26.0	-	-	-	-
	9/15/70	-	4.5	26.0	-	-	-	-
	9/15/70	-	4.3	26.0	-	-	-	-
	7/7/71	-	4.7	27.5	-	-	-	-
	7/20/71	-	4.9	26.0	-	-	-	-
	7/20/71	-	4.9	26.0	-	-	-	-
	7/20/71	-	4.4	26.0	-	-	-	-
	8/10/71	0.03	4.2	27.0	-	-	-	-
	8/26/71	0.19	4.6	28.0	7.2	-	-	-
	8/26/71	-	4.5	27.5	7.2	-	-	-
	8/26/71	-	4.8	27.3	7.2	-	-	-
	9/14/71	0.1	4.8	26.0	7.2	-	-	-
	9/14/71	-	4.9	26.0	7.2	-	-	-
	9/14/71	-	4.6	26.0	7.2	-	-	-
	9/5/73	0.08	4.7	28.0	-	-	-	-
	11/4/73	60.0	8.5	13.0	-	-	-	-
Station Location: Ohio River at Cloverport KY. Municipal STP Eff.	8/28/71	38.0	-	-	-	-	-	-
Segment Number 08218								
Station Location: Ohio River at Wescor	10/20/70	-	0.8	23.0	-	-	-	-
	10/20/70	-	0.5	24.0	-	-	-	-
	10/20/70	-	1.0	22.5	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	10/21/70	-	0.1	22.0	-	-	-	-
	10/21/70	-	0.4	24.0	-	-	-	-
	10/21/70	-	0.4	27.0	-	-	-	-
	10/21/70	-	0.5	25.0	-	-	-	-
	10/21/70	-	0.4	24.0	-	-	-	-
	10/22/70	-	0.4	24.0	-	-	-	-
	10/22/70	-	0.2	24.0	-	-	-	-
	10/22/70	-	0.3	25.0	-	-	-	-
	10/22/70	-	0.6	27.0	-	-	-	-
	10/22/70	-	0.5	-	-	-	-	-
	10/22/70	-	0.8	-	-	-	-	-
	10/23/70	-	0.6	-	-	-	-	-
Station Location: Ohio River at National Southwire Aluminum Eff.	9/10/71	5.6	-	-	-	-	-	-
Station Location: Ohio River at Southwire Roll & Cable Eff.	9/7/71	0.83	-	82.0	-	-	-	-
	9/8/71	0.65	-	82.0	-	-	-	-
Station Location: Ohio River at Cannelton Municipal STP Eff.	9/14/71	21.0	-	-	-	-	-	-
Segment Number 08219 Station Location: Ohio River at Owensboro	10/15/68	0.3	4.8	20.0	7.4	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08220								
Station Location: Ohio River at Owensboro STP	8/24/70	10.0	-	24.0	-	-	-	-
	8/25/70	9.5	-	25.0	-	-	-	-
	8/26/70	9.6	-	24.0	-	-	-	-
	8/27/70	11.5	-	25.0	-	-	-	-
	8/28/70	10.5	-	26.0	-	-	-	-
Station Location: Ohio River at Alcoa Main Eff.	11/3/70	4.2	-	27.0	-	-	-	-
	11/4/70	88.0	-	-	-	-	-	-
Station Location: Ohio River at Alcoa effluent from Fly Ash Pit	9/16/71	0.1	-	22.0	9.8	-	-	-
	9/17/71	0.12	-	22.0	9.9	-	-	-
	9/18/71	0.12	-	22.0	9.8	-	-	-
Station Location: Ohio River at Owensboro, KY. Municipal STP Inf.	8/25/71	12.5	-	-	-	-	-	-
	8/26/71	11.0	-	-	-	-	-	-
	8/27/71	13.5	-	-	-	-	-	-
Station Location: Ohio River at Owensboro, KY. Municipal STP Eff.	8/25/71	11.0	-	-	-	-	-	-
	8/26/71	10.0	-	-	-	-	-	-
	8/27/71	10.0	-	-	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	NH3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08221								
Station Location: Ohio River at Evansville, Ind.	6/19/61	0.3	4.8	22.9	7.6	-	-	-
	10/9/61	-	-	22.8	8.7	-	-	-
	8/15/62	0.1	11.3	25.0	8.6	-	-	-
	8/23/62	0.2	10.2	26.0	8.6	-	-	-
	8/29/62	0.1	4.9	26.0	8.5	-	-	-
	8/2/63	0.2	0.9	28.0	8.1	-	-	-
	7/1/65	-	9.4	28.7	8.6	-	-	-
	8/15/65	0.0	9.9	30.0	8.8	-	-	-
	8/22/65	-	9.5	30.2	8.7	-	-	-
	9/5/65	0.1	3.7	25.0	7.7	-	-	-
	7/3/66	-	10.2	30.2	8.6	-	-	-
	11/2/67	-	4.4	15.8	7.8	-	-	-
Station Location: Ohio River at Evansville STP West	8/24/70	12.5	-	-	-	-	-	-
	8/24/70	12.5	-	-	-	-	-	-
	8/25/70	8.1	-	-	-	-	-	-
	8/26/70	4.8	-	-	-	-	-	-
	8/27/70	5.0	-	-	-	-	-	-
	8/28/70	13.0	-	29.0	-	-	-	-
	11/3/70	24.0	-	20.5	-	-	-	-
	11/3/70	12.5	-	-	-	-	-	-
	11/3/70	19.0	-	20.5	-	-	-	-
	11/4/70	13.5	-	-	-	-	-	-
	11/4/70	15.0	-	20.0	-	-	-	-
	11/4/70	11.0	-	-	-	-	-	-
	11/4/70	21.0	-	21.0	-	-	-	-
	11/5/70	13.0	-	-	-	-	-	-
	11/5/70	14.5	-	20.0	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
	11/5/70	10.5	-	-	-	-	-	-
	11/5/70	21.5	-	21.0	-	-	-	-
	11/5/70	14.0	-	20.0	-	-	-	-
	11/6/70	14.5	-	-	-	-	-	-
Station Location: Ohio River at Evansville STP East	8/24/70	14.0	-	-	-	-	-	-
	8/25/70	8.1	-	-	-	-	-	-
	8/26/70	9.0	-	-	-	-	-	-
	8/27/70	9.6	-	-	-	-	-	-
	8/28/70	11.5	-	27.0	-	-	-	-
	11/3/70	11.0	-	-	-	-	-	-
	11/4/70	11.5	-	-	-	-	-	-
	11/4/70	12.5	-	-	-	-	-	-
	11/5/70	13.0	-	-	-	-	-	-
	11/5/70	12.5	-	-	-	-	-	-
	11/6/70	13.0	-	-	-	-	-	-
Station Location: Ohio River at Evansville, Ind. West Plant Eff.	9/8/71	-	-	27.0	8.9	-	-	-
	9/9/71	6.7	-	-	-	-	-	-
	9/9/71	18.5	-	-	-	-	-	-
	9/9/71	14.5	-	-	-	-	-	-
	9/10/71	9.0	-	-	-	-	-	-
	9/11/71	8.6	-	-	-	-	-	-
Station Location: Ohio River at Evansville, Ind., West Plant Inf.	9/9/71	6.6	-	-	-	-	-	-
	9/10/71	7.5	-	-	-	-	-	-
	9/11/71	8.3	-	-	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Evansville, Ind., East Plant Inf.	9/9/71	8.2	-	-	-	-	-	-
	9/10/71	10.0	-	-	-	-	-	-
	9/11/71	10.0	-	-	-	-	-	-
Station Location: Ohio River at Evansville, Ind., East Plant Eff.	9/8/71	12.0	-	-	-	-	-	-
	9/9/71	8.7	-	-	-	-	-	-
	9/10/71	10.0	-	-	-	-	-	-
	9/11/71	11.0	-	-	-	-	-	-
	9/11/71	10.0	-	-	-	-	-	-
Station Location: Ohio River at Evansville	1/74	-	-	7.2	-	-	405,000	Cl 20mg/L
	3/74	-	10.7	10.6	7.6	-	266,000	Cl 15mg/L
	4/74	-	9.4	13.9	7.4	-	251,000	Cl 15mg/L
	5/74	-	8.5	18.9	7.2	-	138,000	Cl 25mg/L
	6/74	-	7.1	22.8	7.1	-	191,000	Cl 25mg/L
	7/74	-	7.2	26.7	7.8	-	65,000	Cl 30mg/L
	9/74	-	5.7	23.9	7.2	-	132,000	Cl 25mg/L
Station Location: Ohio River at Newburgh, Ind. Municipal STP Eff.	9/14/71	22.5	-	-	-	-	-	-
Segment Number 08222								
Station Location: Ohio River at 1 mi. below Uniontown	8/31/71	-	7.6	28.0	8.7	-	-	-
	8/31/71	-	7.7	28.0	8.7	-	-	-
	8/31/71	-	7.4	28.0	8.8	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Booths Point Light	8/31/71	-	8.0	28.0	9.1	-	-	-
	8/31/71	-	8.0	28.0	8.6	-	-	-
Station Location: Ohio River at Uniontown, KY. Municipal STP Eff.	9/1/71	79.0	-	-	-	-	-	-
Station Location: Ohio River at 0.3 mi. below G.E. Complex	8/31/71	-	8.0	28.0	8.8	-	-	-
	8/31/71	-	7.7	28.0	8.9	-	-	-
Station Location: Ohio River at G.E. Outfall No. 2	8/31/70	10.0	-	-	-	-	-	-
Station Location: Ohio River at G.E. Outfall No. 1	8/31/70	0.06	-	40.0	-	-	-	-
	9/9/70	-	-	38.0	-	-	-	-
	9/9/70	-	-	40.0	-	-	-	-
Station Location: Ohio River at G.E. Mt. Vernon Effluent	8/31/71	-	-	42.0	10.4	-	-	-
	9/1/71	-	-	41.0	11.0	-	-	-
Station Location: Ohio River at G.E. Lime Pond Discharge	8/31/71	-	-	65.0	12.0	-	-	-
	9/1/71	-	-	73.0	11.0	-	-	-
	9/2/71	-	-	62.0	11.0	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH$_3$-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at 1 mi. above G.E.	8/31/71	-	8.0	28.0	8.6	-	-	-
	8/31/71	-	8.4	28.0	8.7	-	-	-
Station Location: Ohio River at 0.3 mi. above Mt. Vernon	8/31/71	-	8.5	-	8.6	-	-	-
Station Location: Ohio River at Mt. Vernon, Ind. Municipal STP Eff.	8/31/71	20.0	-	-	-	-	-	-
	9/1/71	16.0	-	-	-	-	-	-
Station Location: Ohio River at Farm Bureau Refinery Eff.	8/31/71	165.0	-	-	-	-	-	-
	8/31/71	-	-	30.0	13.0	-	-	-
	9/1/71	-	-	29.0	8.8	-	-	-
	9/1/71	130.0	-	-	-	-	-	-
	9/2/71	-	-	20.0	8.7	-	-	-
	9/2/71	135.0	-	-	-	-	-	-
Station Location: Ohio River at Willchemco Inc. Outfall Sew.	9/27/71	135.0	-	29.0	9.1	-	-	-
	9/28/71	255.0	-	30.0	8.3	-	-	-
	9/28/71	100.0	-	-	-	-	-	-
	9/29/71	78.0	-	35.0	8.3	-	-	-
	9/29/71	72.0	-	-	-	-	-	-
	9/30/71	78.0	-	36.0	7.8	-	-	-
	9/30/71	66.0	-	-	-	-	-	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Station Location: Ohio River at Henderson STP	8/24/70	25.0	-	-	-	-	-	-
	8/25/70	11.5	-	-	-	-	-	-
	8/26/70	24.0	-	-	-	-	-	-
	8/27/70	14.0	-	-	-	-	-	-
	8/28/70	12.0	-	-	-	-	-	-
Station Location: Ohio River at Henderson STP Inf.	8/25/71	16.5	-	-	-	-	-	-
	8/26/71	13.5	-	-	-	-	-	-
Station Location: Ohio River at Henderson STP Eff.	8/25/71	16.5	-	-	-	-	-	-
	8/26/71	15.5	-	-	-	-	-	-
Segment Number 08226								
Station Location: Ohio River at Lock & Dam 52	7/13/71	-	4.8	29.0	-	-	-	-
	7/27/72	0.08	4.1	28.5	-	-	-	-
	12/12/73	16.0	-	-	-	-	-	-
Station Location: Ohio River at Lock & Dam 53	10/11/71	-	9.6	22.0	6.6	0.14	170,000	-
	11/1/72	-	8.6	18.0	8.6	0.25	183,000	-
	12/1/71	-	11.0	7.5	-	0.52	439,000	-
	1/2/73	-	11.0	7.0	8.3	0.14	691,000	-
	2/1/73	-	11.0	4.0	6.7	0.14	436,000	-
	3/1/73	-	10.8	7.0	7.3	0.16	213,000	-
	5/1/73	-	10.4	15.5	7.3	0.15	620,000	-
	6/19/73	-	9.0	26.1	7.0	0.13	333,000	-
	8/1/73	-	7.8	28.0	7.2	0.17	256,000	-
	9/5/73	-	5.3	30.0	7.2	0.09	127,000	-

EXHIBIT A-1t (Continued) WATER QUALITY DATA

Segment Number and Location	Date	Parameters						
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	P (mg/L)	Flow (cfs)	Other
Segment Number 08227 Station Location: Ohio River at Cairo	6/26/63	0.2	1.3	27.5	7.5	-	-	-
	7/1/64	0.1	7.6	27.0	2.5	-	-	-
	7/28/65	0.0	4.3	29.2	7.7	-	-	-
	9/8/65	0.1	4.9	26.5	7.5	-	-	-
	4/24/68	-	1.8	16.5	7.5	-	-	-
	5/15/68	-	4.1	19.0	7.5	-	-	-
	5/22/68	-	4.2	19.0	7.5	-	-	-
	5/29/68	-	4.9	19.0	7.5	-	-	-
	6/12/68	-	4.7	23.0	7.4	-	-	-
	6/26/68	-	3.8	26.5	7.5	-	-	-
	7/2/68	-	5.0	26.5	7.5	-	-	-
	7/17/68	-	4.5	28.0	7.5	-	-	-
	7/31/68	-	5.0	29.5	7.6	-	-	-
	9/11/68	-	4.6	23.8	7.6	-	-	-
	9/3/69	-	3.9	27.0	7.5	-	-	-
	9/10/69	-	4.4	26.0	7.5	-	-	-
	9/17/69	-	4.2	24.8	7.6	-	-	-
	9/24/69	-	4.9	24.0	7.5	-	-	-

EXHIBIT A-2t POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Thirty-four county total	1494360	1629679	1728728	1841911	2234659
Out of Basin	707785	769102	812185	877207	1129030
In ORB	786575	860577	916543	964704	1105629
Urban	548232	623864	681687	730486	851140
Rural	238343	236713	234856	234218	254489
Farm	195223	188730	182215	184416	202221
Non-Farm	43120	47983	52641	49802	52268
Ballard County	8291	8276	8214	8187	8186
Out of Basin	4718	4709	4674	4687	4751
In ORB	3573	3567	3540	3500	3435
Urban	--	--	--	--	--
Rural	3573	3567	3540	3500	3435
Farm	2258	2090	2024	1950	1775
Non-Farm	1315	1477	1516	1550	1660
Segment 08001	1973	2050	2057	2055	2077
Urban	--	--	--	--	--
Rural	1973	2050	2057	2055	2077
Farm	1091	1006	974	938	850
Non-Farm	882	1044	1083	1117	1227
Segment 08002	1261	1200	1175	1148	1081
Urban	--	--	--	--	--
Rural	1261	1200	1175	1148	1081
Farm	828	767	742	715	648
Non-Farm	433	433	433	433	433
Segment 08003	159	149	145	140	133
Urban	--	--	--	--	--
Rural	159	149	145	140	133
Farm	159	149	145	140	133
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08004	35	33	32	31	29
Urban	--	--	--	--	--
Rural	35	33	32	31	29
Farm	35	33	32	31	29
Non-Farm	--	--	--	--	--
Segment 08226	89	83	81	78	72
Urban	--	--	--	--	--
Rural	89	83	81	78	72
Farm	89	83	81	78	72
Non-Farm	--	--	--	--	--
Segment 08227	56	52	50	48	43
Urban	--	--	--	--	--
Rural	56	52	50	48	43
Farm	56	52	50	48	43
Non-Farm	--	--	--	--	--
Boone County	21940	32812	38054	44538	72315
Out of Basin	1946	2911	3376	3903	5611
In ORB	19994	29901	34678	40635	66704
Urban	5837	11457	14500	17500	28250
Rural	14157	18444	20178	23135	38450
Farm	14157	18444	20178	23135	38450
Non-Farm	--	--	--	--	--
Segment 08068	4087	5326	5825	6690	8799
Urban	--	--	--	--	--
Rural	4087	5326	5825	6690	8799
Farm	4087	5326	5825	6690	8799
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08069	259	338	370	424	765
Urban	--	--	--	--	--
Rural	259	338	370	424	765
Farm	259	338	370	424	765
Non-Farm	--	--	--	--	--
Segment 08070	520	677	741	849	1530
Urban	--	--	--	--	--
Rural	520	677	741	849	1530
Farm	520	677	741	849	1530
Non-Farm	--	--	--	--	--
Segment 08071	8501	14928	18297	21850	32843
Urban	5837	11457	14500	17500	25000
Rural	2664	3471	3797	4350	7843
Farm	2664	3741	3797	4350	7843
Non-Farm	--	--	--	--	--
Segment 08072	910	1185	1296	1485	2678
Urban	--	--	--	--	--
Rural	910	1185	1296	1485	2678
Farm	910	1185	1296	1485	2678
Non-Farm	--	--	--	--	--
Segment 08073	2144	2793	3056	3501	6313
Urban	--	--	--	--	--
Rural	2144	2793	3056	3501	6313
Farm	2144	2793	3056	3501	6313
Non-Farm	--	--	--	--	--
Segment 08074	390	508	556	637	1148
Urban	--	--	--	--	--
Rural	390	508	556	637	1148
Farm	390	508	556	637	1148
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08075	130	169	185	212	383
Urban	--	--	--	--	--
Rural	130	169	185	212	383
Farm	130	169	185	212	383
Non-Farm	--	--	--	--	--
Segment 08076	584	761	833	955	1722
Urban	--	--	--	--	--
Rural	584	761	833	955	1722
Farm	584	761	833	955	1722
Non-Farm	--	--	--	--	--
Segment 08077	454	592	648	743	1339
Urban	--	--	--	--	--
Rural	454	592	648	743	1339
Farm	454	592	648	743	1339
Non-Farm	--	--	--	--	--
Segment 08209	715	931	1019	1167	2104
Urban	--	--	--	--	--
Rural	715	931	1019	1167	2104
Farm	715	931	1019	1167	2104
Non-Farm	--	--	--	--	--
Segment 08210	1300	1693	1852	2122	3826
Urban	--	--	--	--	--
Rural	1300	1693	1852	2122	3826
Farm	1300	1693	1852	2122	3826
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Boyd County	52163	52376	54562	56748	63306
Out of Basin	16853	16922	17628	17259	18579
In ORB	35310	35454	36934	39489	44727
Urban	34427	33930	34957	37254	41755
Rural	883	1524	1977	2235	2972
Farm	883	1524	1977	2235	2972
Non-Farm	--	--	--	--	--
Segment 08106	83	143	186	210	279
Urban	--	--	--	--	--
Rural	83	143	186	210	279
Farm	83	143	186	210	279
Non-Farm	--	--	--	--	--
Segment 08107	53	91	118	134	178
Urban	--	--	--	--	--
Rural	53	91	118	134	178
Farm	53	91	118	134	178
Non-Farm	--	--	--	--	--
Segment 08108	3912	3486	3672	3850	4382
Urban	3874	3420	3587	3754	4255
Rural	38	66	85	96	127
Farm	38	66	85	96	127
Non-Farm	--	--	--	--	--
Segment 08200	30	52	67	76	102
Urban	--	--	--	--	--
Rural	30	52	67	76	102
Farm	30	52	67	76	102
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08201	30568	30536	31404	33538	37551
Urban	30553	30510	31370	33500	37500
Rural	15	26	34	38	51
Farm	15	26	34	38	51
Non-Farm	--	--	--	--	--
Segment 06004	664	1146	1487	1681	2235
Urban	--	--	--	--	--
Rural	664	1146	1487	1681	2235
Farm	664	1146	1487	1681	2235
Non-Farm	--	--	--	--	--
Bracken County	7422	7227	7353	7548	8447
Out of Basin	2342	2280	2320	2257	2314
In ORB	5080	4947	5033	5291	6133
Urban	--	--	--	--	--
Rural	5080	4947	5033	5291	6133
Farm	3097	2888	2808	2891	3233
Non-Farm	1983	2059	2225	2400	2900
Segment 08083	131	122	119	123	137
Urban	--	--	--	--	--
Rural	131	122	119	123	137
Farm	131	122	119	123	137
Non-Farm	--	--	--	--	--
Segment 08084	209	195	190	196	219
Urban	--	--	--	--	--
Rural	209	195	190	196	219
Farm	209	195	190	196	219
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08085	1889	1950	1865	1950	2245
Urban	--	--	--	--	--
Rural	1889	1950	1865	1950	2245
Farm	1314	1225	1190	1225	1370
Non-Farm	575	625	675	725	875
Segment 08086	209	195	190	195	219
Urban	--	--	--	--	--
Rural	209	195	190	195	219
Farm	209	195	190	195	219
Non-Farm	--	--	--	--	--
Segment 08087	683	637	619	637	712
Urban	--	--	--	--	--
Rural	683	637	619	637	712
Farm	683	637	619	637	712
Non-Farm	--	--	--	--	--
Segment 08206	1775	1776	1883	2018	2409
Urban	--	--	--	--	--
Rural	1775	1776	1883	2018	2409
Farm	367	342	333	343	384
Non-Farm	1408	1434	1550	1675	2025
Segment 08207	184	172	167	172	192
Urban	--	--	--	--	--
Rural	184	172	167	172	192
Farm	184	172	167	172	192
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Breckinridge County	15545	15123	15339	16159	19703
Out of Basin	4329	4345	4507	4751	5915
In ORB	11216	10778	10832	11408	13788
Urban	--	--	--	--	--
Rural	11216	10778	10832	11408	13788
Farm	7315	6543	6163	6309	6600
Non-Farm	3901	4235	4669	5099	7188
Segment 08032	1858	1662	1565	1595	1662
Urban	--	--	--	--	--
Rural	1858	1662	1565	1595	1662
Farm	1858	1662	1565	1595	1662
Non-Farm	--	--	--	--	--
Segment 08033	108	97	91	93	97
Urban	--	--	--	--	--
Rural	108	97	91	93	97
Farm	108	97	91	93	97
Non-Farm	--	--	--	--	--
Segment 08034	130	116	109	112	116
Urban	--	--	--	--	--
Rural	130	116	109	112	116
Farm	130	116	109	112	116
Non-Farm	--	--	--	--	--
Segment 08035	4642	4467	4478	4734	5723
Urban	--	--	--	--	--
Rural	4642	4467	4478	4734	5723
Farm	3265	2920	2751	2827	2939
Non-Farm	1377	1547	1727	1907	2784

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08036	151	135	127	130	136
Urban	--	--	--	--	--
Rural	151	135	127	130	136
Farm	151	135	127	130	136
Non-Farm	--	--	--	--	--
Segment 08037	408	365	344	353	369
Urban	--	--	--	--	--
Rural	408	365	344	353	369
Farm	408	365	344	353	369
Non-Farm	--	--	--	--	--
Segment 08039	42	38	36	37	49
Urban	--	--	--	--	--
Rural	42	38	36	37	49
Farm	42	38	36	37	49
Non-Farm	--	--	--	--	--
Segment 08042	2092	2107	2192	2345	3014
Urban	--	--	--	--	--
Rural	2092	2107	2192	2345	3014
Farm	902	807	760	781	815
Non-Farm	1190	1300	1432	1564	2199
Segment 08217	1785	1791	1890	2019	2612
Urban	--	--	--	--	--
Rural	1785	1791	1890	2019	2612
Farm	451	403	380	391	407
Non-Farm	1334	1388	1510	1628	2205

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Caldwell County	13073	13179	13989	14800	18631
Out of Basin	8723	8794	9334	9998	13037
In ORB	4350	4385	4655	4802	5594
Urban	562	629	715	763	1060
Rural	3788	3756	3940	4039	4534
Farm	3788	3756	3940	4039	4534
Non-Farm	--	--	--	--	--
Segment 10005	134	133	139	143	160
Urban	--	--	--	--	--
Rural	134	133	139	143	160
Farm	134	133	139	143	160
Non-Farm	--	--	--	--	--
Segment 10007	57	57	60	61	69
Urban	--	--	--	--	--
Rural	57	57	60	61	69
Farm	57	57	60	61	69
Non-Farm	--	--	--	--	--
Segment 10010	1950	1934	2030	2081	2336
Urban	--	--	--	--	--
Rural	1950	1934	2030	2081	2336
Farm	1950	1934	2030	2081	2336
Non-Farm	--	--	--	--	--
Segment 10011	1557	1616	1750	1824	2251
Urban	562	629	715	763	1060
Rural	995	987	1035	1061	1191
Farm	995	987	1035	1061	1191
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10012	421	417	437	448	503
Urban	--	--	--	--	--
Rural	421	417	437	448	503
Farm	421	417	437	448	503
Non-Farm	--	--	--	--	--
Segment 10013	231	228	239	245	275
Urban	--	--	--	--	--
Rural	231	228	239	245	275
Farm	231	228	239	245	275
Non-Farm	--	--	--	--	--
Campbell County	86803	88561	95126	101751	121626
Out of Basin	30228	30840	33126	35451	42326
In ORB	56575	57721	62000	66300	79300
Urban	46957	50794	58000	62000	74200
Rural	9618	6927	4000	4300	5100
Farm	9618	6927	4000	4300	5100
Non-Farm	--	--	--	--	--
Segment 08078	2323	1673	966	1037	1231
Urban	--	--	--	--	--
Rural	2323	1673	966	1037	1231
Farm	2323	1673	966	1037	1231
Non-Farm	--	--	--	--	--
Segment 08079	332	239	138	148	176
Urban	--	--	--	--	--
Rural	332	239	138	148	176
Farm	332	239	138	148	176
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08080	8310	7266	6105	6544	7801
Urban	3559	3844	4129	4417	5280
Rural	4751	3422	1976	2127	2521
Farm	4751	3422	1976	2127	2521
Non-Farm	--	--	--	--	--
Segment 08081	664	478	276	296	352
Urban	--	--	--	--	--
Rural	664	478	276	296	352
Farm	664	478	276	296	352
Non-Farm	--	--	--	--	--
Segment 08207	1548	1115	644	692	820
Urban	--	--	--	--	--
Rural	1548	1115	644	692	820
Farm	1548	1115	644	692	820
Non-Farm	--	--	--	--	--
Segment 08208	43398	46950	53871	57583	68920
Urban	43398	46950	53871	57583	68920
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Carroll County	7978	8523	8863	9262	10850
Out of Basin	6434	6874	7148	7438	9131
In ORB	1544	1649	1715	1824	1719
Urban	--	--	--	--	--
Rural	1544	1649	1715	1824	1719
Farm	1202	1264	1284	1348	1046
Non-Farm	342	385	431	476	673

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08060	153	161	164	172	134
Urban	--	--	--	--	--
Rural	153	161	164	172	134
Farm	153	161	164	172	134
Non-Farm	--	--	--	--	--
Segment 08061	281	295	300	316	245
Urban	--	--	--	--	--
Rural	281	295	300	316	245
Farm	281	295	300	316	245
Non-Farm	--	--	--	--	--
Segment 08062	77	81	82	86	67
Urban	--	--	--	--	--
Rural	77	81	82	86	67
Farm	77	81	82	86	67
Non-Farm	--	--	--	--	--
Segment 08211	700	762	813	878	985
Urban	--	--	--	--	--
Rural	700	762	813	878	985
Farm	358	377	382	402	312
Non-Farm	342	385	431	476	673
Segment 08212	333	350	356	372	288
Urban	--	--	--	--	--
Rural	333	350	356	372	288
Farm	333	350	356	372	288
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Carter County	20817	19850	19856	19862	19885
Out of Basin	--	--	--	--	--
In ORB	20817	19850	19856	19862	19885
Urban	--	--	--	2750	3400
Rural	20817	19850	19856	17112	16485
Farm	18237	16300	15906	15362	14085
Non-Farm	2580	3550	3950	1750	2400
Segment 06002	140	125	122	117	107
Urban	--	--	--	--	--
Rural	140	125	122	117	107
Farm	140	125	122	117	107
Non-Farm	--	--	--	--	--
Segment 06004	884	790	770	743	680
Urban	--	--	--	--	--
Rural	884	790	770	743	680
Farm	884	790	770	743	680
Non-Farm	--	--	--	--	--
Segment 06005	604	540	527	508	465
Urban	--	--	--	--	--
Rural	604	540	527	508	465
Farm	604	540	527	508	465
Non-Farm	--	--	--	--	--
Segment 06006	743	664	648	626	573
Urban	--	--	--	--	--
Rural	743	664	648	626	573
Farm	743	664	648	626	573
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06007	2842	3279	3503	3767	4331
Urban	--	--	--	2750	3400
Rural	2842	3279	3503	1017	931
Farm	1207	1079	1053	1017	931
Non-Farm	1635	2200	2450	--	--
Segment 06008	511	457	446	430	394
Urban	--	--	--	--	--
Rural	511	457	446	430	394
Farm	511	457	446	430	394
Non-Farm	--	--	--	--	--
Segment 06009	836	747	729	704	644
Urban	--	--	--	--	--
Rural	836	747	729	704	644
Farm	836	747	729	704	644
Non-Farm	--	--	--	--	--
Segment 06010	836	747	729	704	644
Urban	--	--	--	--	--
Rural	836	747	729	704	644
Farm	836	747	729	704	644
Non-Farm	--	--	--	--	--
Segment 06011	511	457	446	430	394
Urban	--	--	--	--	--
Rural	511	457	446	430	394
Farm	511	457	446	430	394
Non-Farm	--	--	--	--	--
Segment 06012	2733	2443	2384	2308	2125
Urban	--	--	--	--	--
Rural	2733	2443	2384	2308	2125
Farm	2733	2443	2384	2308	2125
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06013	1068	955	932	899	823
Urban	--	--	--	--	--
Rural	1068	955	932	899	823
Farm	1068	955	932	899	823
Non-Farm	--	--	--	--	--
Segment 11004	326	291	284	274	251
Urban	--	--	--	--	--
Rural	326	291	284	274	251
Farm	326	291	284	274	251
Non-Farm	--	--	--	--	--
Segment 11005	2266	2025	1976	1910	1758
Urban	--	--	--	--	--
Rural	2266	2025	1976	1910	1758
Farm	2266	2025	1976	1910	1758
Non-Farm	--	--	--	--	--
Segment 11006	6517	6330	6360	6442	6696
Urban	--	--	--	--	--
Rural	6517	6330	6360	6442	6696
Farm	5572	4980	4860	4692	4296
Non-Farm	945	1350	1500	1750	2400
Christian County	56904	56224	60500	65400	84150
Out of Basin	53748	53106	57145	62097	81128
In ORB	3156	3118	3355	3303	3022
Urban	--	--	--	--	--
Rural	3156	3118	3355	3303	3022
Farm	2525	2487	2724	2672	2391
Non-Farm	631	631	631	631	631

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10013	355	350	383	374	336
Urban	--	--	--	--	--
Rural	355	350	383	374	336
Farm	335	350	383	374	336
Non-Farm	--	--	--	--	--
Segment 10014	2801	2768	2972	2929	2686
Urban	--	--	--	--	--
Rural	2801	2768	2972	2929	2686
Farm	2170	2137	2341	2298	2055
Non-Farm	631	631	631	631	631
Crittenden County	8648	8493	8796	9100	10600
Out of Basin	1265	1243	1287	1310	1454
In ORB	7383	7250	7509	7790	9146
Urban	--	3008	3204	3426	4493
Rural	7383	4242	4305	4364	4653
Farm	4915	4242	4305	4364	4653
Non-Farm	2468	--	--	--	--
Segment 08011	651	562	570	579	619
Urban	--	--	--	--	--
Rural	651	562	570	579	619
Farm	651	562	570	579	619
Non-Farm	--	--	--	--	--
Segment 08012	788	680	690	699	745
Urban	--	--	--	--	--
Rural	788	680	690	699	745
Farm	788	680	690	699	745
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08013	3427	3836	4044	4277	5400
Urban	--	3008	3204	3426	4493
Rural	3427	828	840	851	907
Farm	959	828	840	851	907
Non-Farm	2468	--	--	--	--
Segment 08014	189	163	165	167	178
Urban	--	--	--	--	--
Rural	189	163	165	167	178
Farm	189	163	165	167	178
Non-Farm	--	--	--	--	--
Segment 08224	376	325	330	334	356
Urban	--	--	--	--	--
Rural	376	325	330	334	356
Farm	376	325	330	334	356
Non-Farm	--	--	--	--	--
Segment 10001	137	118	120	122	130
Urban	--	--	--	--	--
Rural	137	118	120	122	130
Farm	137	118	120	122	130
Non-Farm	--	--	--	--	--
Segment 10003	137	118	120	122	130
Urban	--	--	--	--	--
Rural	137	118	120	122	130
Farm	137	118	120	122	130
Non-Farm	--	--	--	--	--
Segment 10005	1627	1404	1425	1444	1539
Urban	--	--	--	--	--
Rural	1627	1404	1425	1444	1539
Farm	1627	1404	1425	1444	1539
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10007	51	44	45	46	49
Urban	--	--	--	--	--
Rural	51	44	45	46	49
Farm	51	44	45	46	49
Non-Farm	--	--	--	--	--
Daviess County	70588	79486	84705	91627	116864
Out of Basin	42428	47776	50570	54530	69231
In ORB	28160	31710	34135	37097	47633
Urban	21371	25430	27430	29946	38840
Rural	6789	6280	6705	7151	8793
Farm	6138	5519	5889	6280	7693
Non-Farm	651	761	816	871	1100
Segment 08024	279	250	242	258	316
Urban	--	--	--	--	--
Rural	279	250	242	258	316
Farm	279	250	242	258	316
Non-Farm	--	--	--	--	--
Segment 08025	781	703	1251	1334	1634
Urban	--	--	--	--	--
Rural	781	703	1251	1334	1634
Farm	781	703	1251	1334	1634
Non-Farm	--	--	--	--	--
Segment 08026	2065	1856	1787	1906	2335
Urban	--	--	--	--	--
Rural	2065	1856	1787	1906	2335
Farm	2065	1856	1787	1906	2335
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08027	279	250	242	258	316
Urban	--	--	--	--	--
Rural	279	250	242	258	316
Farm	279	250	242	258	316
Non-Farm	--	--	--	--	--
Segment 08028	1953	1757	1691	1803	2209
Urban	--	--	--	--	--
Rural	1953	1757	1691	1803	2209
Farm	1953	1757	1691	1803	2209
Non-Farm	--	--	--	--	--
Segment 08219	22022	26191	28246	30817	39940
Urban	21371	25430	27430	29946	38840
Rural	651	761	816	871	1100
Farm	--	--	--	--	--
Non-Farm	651	761	816	871	1100
Segment 08220	781	703	676	721	883
Urban	--	--	--	--	--
Rural	781	703	676	721	883
Farm	781	703	676	721	883
Non-Farm	--	--	--	--	--
Elliott County	6330	5933	5933	5933	5933
Out of Basin	258	242	242	217	234
In ORB	6072	5691	5691	5716	5699
Urban	--	--	--	--	--
Rural	6072	5691	5691	5716	5699
Farm	5877	5499	5381	5336	5129
Non-Farm	195	192	310	380	570

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06010	382	357	350	347	333
Urban	--	--	--	--	--
Rural	382	357	350	347	333
Farm	382	357	350	347	333
Non-Farm	--	--	--	--	--
Segment 06012	1378	1286	1256	1247	1200
Urban	--	--	--	--	--
Rural	1378	1286	1256	1247	1200
Farm	1378	1286	1256	1247	1200
Non-Farm	--	--	--	--	--
Segment 06013	4312	4048	4085	4122	4166
Urban	--	--	--	--	--
Rural	4312	4048	4085	4122	4166
Farm	4117	3856	3775	3742	3596
Non-Farm	195	192	310	380	570
Gallatin County	3867	4134	4492	4932	6787
Out of Basin	758	810	880	1169	1141
In ORB	3109	3324	3612	3763	5646
Urban	--	--	--	--	2558
Rural	3109	3324	3612	3763	3088
Farm	2128	2092	2181	2133	3088
Non-Farm	981	1232	1431	1630	--
Segment 08062	249	245	255	249	361
Urban	--	--	--	--	--
Rural	249	245	255	249	361
Farm	249	245	255	249	361
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08063	110	108	113	111	160
Urban	--	--	--	--	--
Rural	110	108	113	111	160
Farm	110	108	113	111	160
Non-Farm	--	--	--	--	--
Segment 08064	166	163	170	166	241
Urban	--	--	--	--	--
Rural	166	163	170	166	241
Farm	166	163	170	166	241
Non-Farm	--	--	--	--	--
Segment 08065	277	272	283	277	401
Urban	--	--	--	--	--
Rural	277	272	283	277	401
Farm	277	272	283	277	401
Non-Farm	--	--	--	--	--
Segment 08066	303	298	311	305	441
Urban	--	--	--	--	--
Rural	303	298	311	305	441
Farm	303	298	311	305	441
Non-Farm	--	--	--	--	--
Segment 08067	138	136	142	139	201
Urban	--	--	--	--	--
Rural	138	136	142	139	201
Farm	138	136	142	139	201
Non-Farm	--	--	--	--	--
Segment	442	435	454	443	642
Urban	--	--	--	--	--
Rural	442	435	454	443	642
Farm	442	435	454	443	642
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08210	1340	1585	1799	1990	3079
Urban	--	--	--	--	2558
Rural	1340	1585	1799	1990	521
Farm	359	353	368	360	521
Non-Farm	981	1232	1431	1630	--
Segment 08211	83	82	85	83	120
Urban	--	--	--	--	--
Rural	83	82	85	83	120
Farm	83	82	85	83	120
Non-Farm	--	--	--	--	--
Greenup County	29238	33192	35412	37632	44292
Out of Basin	--	--	--	--	--
In ORB	29238	33192	35413	37632	44292
Urban	3741	7380	9000	16225	29680
Rural	25497	25812	26412	21407	14612
Farm	18649	16503	15072	13535	9374
Non-Farm	6848	9309	11340	7872	5238
Segment 08099	110	97	89	80	55
Urban	--	--	--	--	--
Rural	110	97	89	80	55
Farm	110	97	89	80	55
Non-Farm	--	--	--	--	--
Segment 08100	165	146	133	119	83
Urban	--	--	--	--	--
Rural	165	146	133	119	83
Farm	165	146	133	119	83
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08101	218	194	177	159	110
Urban	--	--	--	--	--
Rural	218	194	177	159	110
Farm	218	194	177	159	110
Non-Farm	--	--	--	--	--
Segment 08102	330	292	266	239	166
Urban	--	--	--	--	--
Rural	330	292	266	239	166
Farm	330	292	266	239	166
Non-Farm	--	--	--	--	--
Segment 08103	975	1277	1644	2030	3135
Urban	--	--	--	--	3080
Rural	975	1277	1644	2030	55
Farm	110	97	89	80	55
Non-Farm	865	1180	1555	1950	--
Segment 08104	4966	9334	11339	13455	19605
Urban	3741	7380	9000	13375	19550
Rural	1225	1954	2339	80	55
Farm	110	97	89	80	55
Non-Farm	1115	1857	2250	--	--
Segment 08105	165	146	133	119	83
Urban	--	--	--	--	--
Rural	165	146	133	119	83
Farm	165	146	133	119	83
Non-Farm	--	--	--	--	--
Segment 08106	733	1316	1375	1476	1784
Urban	--	--	--	--	--
Rural	733	1316	1375	1476	1784
Farm	396	350	319	329	362
Non-Farm	337	966	1056	1147	1422

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08201	1512	2030	2444	2890	4178
Urban	--	--	--	2850	4150
Rural	1512	2030	2444	40	28
Farm	54	48	44	40	28
Non-Farm	1458	1982	2400	--	--
Segment 08202	1345	1461	1764	2030	2955
Urban	--	--	--	--	2900
Rural	1345	1461	1764	2030	55
Farm	110	97	89	80	55
Non-Farm	1235	1364	1675	1950	--
Segment 08203	1734	1721	1803	1883	2139
Urban	--	--	--	--	--
Rural	1734	1721	1803	1883	2139
Farm	494	437	399	358	248
Non-Farm	1240	1284	1404	1525	1891
Segment 08204	1096	1064	1354	1618	2146
Urban	--	--	--	--	--
Rural	1096	1064	1354	1618	2146
Farm	438	388	354	318	221
Non-Farm	658	676	1000	1300	1925
Segment 08205	110	97	89	80	55
Urban	--	--	--	--	--
Rural	110	97	89	80	55
Farm	110	97	89	80	55
Non-Farm	--	--	--	--	--
Segment 06001	1726	1527	1395	1248	847
Urban	--	--	--	--	--
Rural	1726	1527	1395	1248	847
Farm	1726	1527	1395	1248	847
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06002	3781	3346	3056	2734	1859
Urban	--	--	--	--	--
Rural	3781	3346	3056	2734	1859
Farm	3781	3346	3056	2734	1859
Non-Farm	--	--	--	--	--
Segment 06003	110	97	89	80	55
Urban	--	--	--	--	--
Rural	110	97	89	80	55
Farm	110	97	89	80	55
Non-Farm	--	--	--	--	--
Segment 06004	1836	1625	1484	1327	902
Urban	--	--	--	--	--
Rural	1836	1625	1484	1327	902
Farm	1836	1625	1484	1327	902
Non-Farm	--	--	--	--	--
Segment 11001	3851	3408	3112	2780	1884
Urban	--	--	--	--	--
Rural	3851	3408	3112	2780	1884
Farm	3851	3408	3112	2780	1884
Non-Farm	--	--	--	--	--
Segment 11002	1150	1018	930	836	580
Urban	--	--	--	--	--
Rural	1150	1018	930	836	580
Farm	1150	1018	930	836	580
Non-Farm	--	--	--	--	--
Segment 11003	548	485	443	398	276
Urban	--	--	--	--	--
Rural	548	485	443	398	276
Farm	548	485	443	398	276
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 11004	2783	2403	2249	2011	1367
Urban	--	--	--	--	--
Rural	2783	2403	2249	2011	1367
Farm	2783	2403	2249	2011	1367
Non-Farm	--	--	--	--	--
Segment 11006	54	48	44	40	28
Urban	--	--	--	--	--
Rural	54	48	44	40	28
Farm	54	48	44	40	28
Non-Farm	--	--	--	--	--
Hancock County	5330	7080	7832	8731	12584
Out of Basin	1173	1558	1723	1921	867
In ORB	4157	5522	6109	6810	11717
Urban	--	--	--	--	--
Rural	4157	5522	6109	6810	11717
Farm	2665	2665	2609	2760	5917
Non-Farm	1492	2857	3500	4050	5800
Segment 08028	1476	1476	1445	1525	3268
Urban	--	--	--	--	--
Rural	1476	1476	1445	1525	3268
Farm	1476	1476	1445	1525	3268
Non-Farm	--	--	--	--	--
Segment 08928	37	37	36	39	83
Urban	--	--	--	--	--
Rural	37	37	36	39	83
Farm	37	37	36	39	83
Non-Farm	--	--	--	--	--
Segment 08029	335	335	328	347	745
Urban	--	--	--	--	--
Rural	335	335	328	347	745
Farm	335	335	328	347	745
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08030	335	335	328	347	745
Urban	--	--	--	--	--
Rural	335	335	328	347	745
Farm	335	335	328	347	745
Non-Farm	--	--	--	--	--
Segment 08031	204	204	200	212	455
Urban	--	--	--	--	--
Rural	204	204	200	212	455
Farm	204	204	200	212	455
Non-Farm	--	--	--	--	--
Segment 08032	93	93	91	97	207
Urban	--	--	--	--	--
Rural	93	93	91	97	207
Farm	93	93	91	97	207
Non-Farm	--	--	--	--	--
Segment 08217	37	37	36	39	83
Urban	--	--	--	--	--
Rural	37	37	36	39	83
Farm	37	37	36	39	83
Non-Farm	--	--	--	--	--
Segment 08218	1012	1392	1727	2035	3090
Urban	--	--	--	--	--
Rural	1012	1392	1727	2035	3090
Farm	130	130	127	135	290
Non-Farm	882	1262	1600	1900	2800
Segment 08219	628	1613	1918	2169	3041
Urban	--	--	--	--	--
Rural	628	1613	1918	2169	3041
Farm	18	18	18	19	41
Non-Farm	610	1595	1900	2150	3000

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Hardin County	67789	78421	83974	89540	105553
Out of Basin	59898	69292	74199	79118	93267
In ORB	7891	9129	9775	10422	12286
Urban	--	2987	3286	3584	4465
Rural	7891	6142	6489	6838	7821
Farm	3729	4401	4741	5069	5959
Non-Farm	4162	1741	1748	1769	1862
Segment 08035	101	119	128	137	161
Urban	--	--	--	--	--
Rural	101	119	128	137	161
Farm	101	119	128	137	161
Non-Farm	--	--	--	--	--
Segment 08042	602	711	766	821	967
Urban	--	--	--	--	--
Rural	602	711	766	821	967
Farm	602	711	766	821	967
Non-Farm	--	--	--	--	--
Segment 08044	4426	5665	6171	6667	8088
Urban	--	2987	4386	3584	4465
Rural	4426	2678	2885	3083	3623
Farm	2269	2678	2885	3083	3623
Non-Farm	2157	--	--	--	--
Segment 08216	2762	2634	2710	2797	3070
Urban	--	--	--	--	--
Rural	2762	2634	2710	2797	3070
Farm	757	893	962	1028	1208
Non-Farm	2005	1741	1748	1769	1862

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Henderson County	33519	36031	37905	39778	46783
Out of Basin	5279	5675	5970	6263	7734
In ORB	28240	30356	31935	33515	39049
Urban	16892	23311	24377	25778	29981
Rural	11348	7045	7558	7737	9068
Farm	10602	6165	6632	6765	7923
Non-Farm	746	880	926	972	1145
Segment 08019	196	114	123	126	148
Urban	--	--	--	--	--
Rural	196	114	123	126	148
Farm	196	114	123	126	148
Non-Farm	--	--	--	--	--
Segment 08020	196	114	123	126	148
Urban	--	--	--	--	--
Rural	196	114	123	126	148
Farm	196	114	123	126	148
Non-Farm	--	--	--	--	--
Segment 08021	4923	3320	3549	3648	4278
Urban	--	--	--	--	--
Rural	4923	3320	3549	3648	4278
Farm	4197	2440	2623	2676	3133
Non-Farm	746	880	926	972	1145
Segment 08022	196	114	123	126	148
Urban	--	--	--	--	--
Rural	196	114	123	126	148
Farm	196	114	123	126	148
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08023	11743	12764	13423	14093	16413
Urban	7432	10257	10726	11342	13192
Rural	4311	2507	2697	2751	3221
Farm	4311	2507	2697	2751	3221
Non-Farm	--	--	--	--	--
Segment 08220	162	94	101	103	120
Urban	--	--	--	--	--
Rural	162	94	101	103	120
Farm	162	94	101	103	120
Non-Farm	--	--	--	--	--
Segment 08221	10089	13420	14045	14838	17261
Urban	9460	13054	13651	14436	16789
Rural	629	366	394	402	472
Farm	629	366	394	402	472
Non-Farm	--	--	--	--	--
Segment 08222	715	416	448	455	533
Urban	--	--	--	--	--
Rural	715	416	448	455	533
Farm	715	416	448	455	533
Non-Farm	--	--	--	--	--
Henry County	10987	10910	11421	12066	14842
Out of Basin	10786	10710	11211	11845	14569
In ORB	201	200	210	221	273
Urban	--	--	--	--	--
Rural	201	200	210	221	273
Farm	201	200	210	221	273
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08052	201	200	210	221	273
Urban	--	--	--	--	--
Rural	201	200	210	221	273
Farm	201	200	210	221	273
Non-Farm	--	--	--	--	--
Hopkins County	38458	38167	38873	39843	43796
Out of Basin	26507	26306	26793	26189	34097
In ORB	11951	11861	12080	13654	9699
Urban	5788	2830	3200	3400	4000
Rural	6163	9031	8880	10254	5699
Farm	6163	6710	6560	7934	3379
Non-Farm	--	2321	2320	2320	2320
Segment 10008	3161	3441	3364	4068	1731
Urban	--	--	--	--	--
Rural	3161	3441	3364	4068	1731
Farm	3161	3441	3364	4068	1731
Non-Farm	--	--	--	--	--
Segment 10009	3838	3466	3439	3674	2898
Urban	2786	--	--	--	--
Rural	1052	3466	3439	3674	2898
Farm	1052	1145	1119	1354	578
Non-Farm	--	2321	2320	2320	2320
Segment 10010	469	511	500	605	258
Urban	--	--	--	--	--
Rural	469	511	500	605	258
Farm	469	511	500	605	258
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10012	3360	3220	3581	3861	4197
Urban	3002	2830	3200	3400	4000
Rural	358	390	381	461	197
Farm	358	390	381	461	197
Non-Farm	--	--	--	--	--
Segment 10014	1123	1223	1196	1446	615
Urban	--	--	--	--	--
Rural	1123	1223	1196	1446	615
Farm	1123	1223	1196	1446	615
Non-Farm	--	--	--	--	--
Jefferson County	610947	695055	744480	800500	994525
Out of Basin	249266	283582	303747	340209	488311
In ORB	361681	411473	440733	460291	506214
Urban	361681	411473	440733	460291	506214
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08045	80250	88450	92550	96660	106305
Urban	80250	88450	92550	96660	106305
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08046	42030	46330	48480	50630	55685
Urban	42030	46330	48480	50630	55685
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08047	102260	124777	141035	147290	161990
Urban	102260	124777	141035	147290	161990
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08048	3820	4211	4407	4603	5062
Urban	3820	4211	4407	4603	5062
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08049	38220	42120	44070	46030	50620
Urban	38220	42120	44070	46030	50620
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08050	38220	41120	44070	46030	50620
Urban	38220	41120	44070	46030	50620
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08213	19480	21480	22480	23480	25820
Urban	19480	21480	22480	23480	25820
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08214	37840	41700	43630	45560	50110
Urban	37840	41700	43630	45560	50110
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08215 (1)	--	--	--	--	--
Urban	--	--	--	--	--
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Kenton County	120700	129440	138330	147220	173890
Out of Basin	94523	101368	108330	115220	136890
In ORB	26177	28072	30000	32000	38000
Urban	25960	27819	29729	31711	37659
Rural	217	253	271	289	341
Farm	217	253	271	289	341
Non-Farm	--	--	--	--	--
Segment 08068	217	253	271	289	341
Urban	--	--	--	--	--
Rural	217	253	271	289	341
Farm	217	253	271	289	341
Non-Farm	--	--	--	--	--
Segment 08077	6695	7174	7667	8178	9712
Urban	6695	7174	7667	8178	9712
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08977	2869	3075	3286	3505	4162
Urban	2869	3075	3286	3505	4162
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

(1) All industrial and commercial land.

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08208	4099	4393	4694	5007	5946
Urban	4099	4393	4694	5007	5946
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08209	12297	13177	14082	15021	17839
Urban	12297	13177	14082	15021	17839
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Lawrence County	12134	10726	10726	10726	10726
Out of Basin	11188	9890	9890	9890	9890
In ORB	946	836	836	836	836
Urban	--	--	--	--	--
Rural	946	836	836	836	836
Farm	946	836	836	836	836
Non-Farm	--	--	--	--	--
Segment 06004	418	369	369	369	369
Urban	--	--	--	--	--
Rural	418	369	369	369	369
Farm	418	369	369	369	369
Non-Farm	--	--	--	--	--
Segment 06012	528	467	467	467	467
Urban	--	--	--	--	--
Rural	528	467	467	467	467
Farm	528	467	467	467	467
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Lewis County	13115	12355	12300	12300	12300
Out of Basin	501	472	470	470	470
In ORB	12614	11883	11830	11830	11830
Urban	--	--	--	--	--
Rural	12614	11883	11830	11830	11830
Farm	10624	9893	9840	9840	9840
Non-Farm	1990	1990	1990	1990	1990
Segment 08091	1495	1392	1385	1385	1385
Urban	--	--	--	--	--
Rural	1495	1392	1385	1385	1385
Farm	1495	1392	1385	1385	1385
Non-Farm	--	--	--	--	--
Segment 08092	230	214	213	213	213
Urban	--	--	--	--	--
Rural	230	214	213	213	213
Farm	230	214	213	213	213
Non-Farm	--	--	--	--	--
Segment 08093	507	472	469	469	469
Urban	--	--	--	--	--
Rural	507	472	469	469	469
Farm	507	472	469	469	469
Non-Farm	--	--	--	--	--
Segment 08094	1400	1304	1297	1297	1297
Urban	--	--	--	--	--
Rural	1400	1304	1297	1297	1297
Farm	1400	1304	1297	1297	1297
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08095	5888	5483	5453	5453	5453
Urban	--	--	--	--	--
Rural	5888	5483	5453	5453	5453
Farm	5888	5483	5453	5453	5453
Non-Farm	--	--	--	--	--
Segment 08096	184	171	170	170	170
Urban	--	--	--	--	--
Rural	184	171	170	170	170
Farm	184	171	170	170	170
Non-Farm	--	--	--	--	--
Segment 08097	46	43	43	43	43
Urban	--	--	--	--	--
Rural	46	43	43	43	43
Farm	46	43	43	43	43
Non-Farm	--	--	--	--	--
Segment 08098	69	64	64	64	64
Urban	--	--	--	--	--
Rural	69	64	64	64	64
Farm	69	64	64	64	64
Non-Farm	--	--	--	--	--
Segment 08205	2795	2740	2736	2736	2736
Urban	--	--	--	--	--
Rural	2795	2740	2736	2736	2736
Farm	805	750	746	746	746
Non-Farm	1990	1990	1990	1990	1990

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Livingston County	7029	7596	7848	8100	9300
Out of Basin	4007	4330	4474	4617	5300
In ORB	3022	3266	3374	3483	4000
Urban	--	--	--	--	--
Rural	3022	3266	3374	3483	4000
Farm	3022	3266	3374	3483	4000
Non-Farm	--	--	--	--	--
Segment 08009	851	914	947	980	1123
Urban	--	--	--	--	--
Rural	851	914	947	980	1123
Farm	851	914	947	980	1123
Non-Farm	--	--	--	--	--
Segment 08010	206	224	231	239	274
Urban	--	--	--	--	--
Rural	206	224	231	239	274
Farm	206	224	231	239	274
Non-Farm	--	--	--	--	--
Segment 08011	746	807	833	857	987
Urban	--	--	--	--	--
Rural	746	807	833	857	987
Farm	746	807	833	857	987
Non-Farm	--	--	--	--	--
Segment 08224	787	851	878	905	1041
Urban	--	--	--	--	--
Rural	787	851	878	905	1041
Farm	787	851	878	905	1041
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08225	432	470	485	502	575
Urban	--	--	--	--	--
Rural	432	470	485	502	575
Farm	432	470	485	502	575
Non-Farm	--	--	--	--	--
Mason County	18454	17273	16814	16814	16814
Out of Basin	6309	5905	5748	5748	5748
In ORB	12145	11368	11066	11066	11066
Urban	8484	7411	7188	7188	7188
Rural	3661	3957	3878	3878	3878
Farm	2945	3241	3162	3162	3162
Non-Farm	716	716	716	716	716
Segment 08087	323	356	347	347	347
Urban	--	--	--	--	--
Rural	323	356	347	347	347
Farm	323	356	347	347	347
Non-Farm	--	--	--	--	--
Segment 08088	647	712	695	695	695
Urban	--	--	--	--	--
Rural	647	712	695	695	695
Farm	647	712	695	695	695
Non-Farm	--	--	--	--	--
Segment 08089	1266	1349	1327	1327	1327
Urban	--	--	--	--	--
Rural	1266	1349	1327	1327	1327
Farm	827	910	888	888	888
Non-Farm	439	439	439	439	439

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08090	2355	2110	2048	2048	2048
Urban	2121	1853	1797	1797	1797
Rural	234	257	251	251	251
Farm	234	257	251	251	251
Non-Farm	--	--	--	--	--
Segment 08091	213	234	228	228	228
Urban	--	--	--	--	--
Rural	213	234	228	228	228
Farm	213	234	228	228	228
Non-Farm	--	--	--	--	--
Segment 08205	6813	6053	5874	5874	5874
Urban	6363	5558	5391	5391	5391
Rural	450	495	483	483	483
Farm	450	494	483	483	483
Non-Farm	--	--	--	--	--
Segment 08206	528	554	547	547	547
Urban	--	--	--	--	--
Rural	528	554	547	547	547
Farm	251	277	270	270	270
Non-Farm	277	277	277	277	277
McCracken County	57306	58281	61911	62708	65023
Out of Basin	34635	35224	35693	37045	39639
In ORB	22671	23057	26218	25663	25384
Urban	8620	7907	8192	8513	9426
Rural	14051	15150	18026	17150	15958
Farm	14051	15150	18026	17150	15958
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08003	485	523	523	498	463
Urban	--	--	--	--	--
Rural	485	523	523	498	463
Farm	485	523	523	498	463
Non-Farm	--	--	--	--	--
Segment 08004	1647	1774	1778	1692	1574
Urban	--	--	--	--	--
Rural	1647	1774	1778	1692	1574
Farm	1647	1774	1778	1692	1574
Non-Farm	--	--	--	--	--
Segment 08005	1647	1774	1778	1692	1574
Urban	--	--	--	--	--
Rural	1647	1774	1778	1692	1574
Farm	1647	1774	1778	1692	1574
Non-Farm	--	--	--	--	--
Segment 08006	872	941	941	896	833
Urban	--	--	--	--	--
Rural	872	941	941	896	833
Farm	872	941	941	896	833
Non-Farm	--	--	--	--	--
Segment 08906	97	105	105	100	93
Urban	--	--	--	--	--
Rural	97	105	105	100	93
Farm	97	105	105	100	93
Non-Farm	--	--	--	--	--
Segment 08007	6686	7211	7217	6866	6389
Urban	--	--	--	--	--
Rural	6686	7211	7217	6866	6389
Farm	6686	7211	7217	6866	6389
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08008	2229	2404	5266	5008	4662
Urban	--	--	--	--	--
Rural	2229	2404	5266	5008	4662
Farm	2229	2404	5266	5008	4662
Non-Farm	--	--	--	--	--
Segment 08226	9008	8325	8610	8911	9796
Urban	8620	7907	8192	8513	9426
Rural	388	418	418	398	370
Farm	388	418	418	398	370
Non-Farm	--	--	--	--	--
Meade County	18938	18796	19157	19517	20130
Out of Basin	--	--	--	--	--
In ORB	18938	18796	19157	19517	20130
Urban	--	--	2750	4100	8210
Rural	18938	18796	16407	15417	11920
Farm	15748	14196	12522	11250	6879
Non-Farm	3190	4600	3885	4167	5041
Segment 08037	160	144	127	114	68
Urban	--	--	--	--	--
Rural	160	144	127	114	68
Farm	160	144	127	114	68
Non-Farm	--	--	--	--	--
Segment 08038	370	334	295	265	162
Urban	--	--	--	--	--
Rural	370	334	295	265	162
Farm	370	334	295	265	162
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08039	425	383	338	303	180
Urban	--	--	--	--	--
Rural	425	383	338	303	180
Farm	425	383	338	303	180
Non-Farm	--	--	--	--	--
Segment 08040	318	287	253	227	139
Urban	--	--	--	--	--
Rural	318	287	253	227	139
Farm	318	287	253	227	139
Non-Farm	--	--	--	--	--
Segment 08041	1752	1579	1393	1251	766
Urban	--	--	--	--	--
Rural	1752	1579	1393	1251	766
Farm	1752	1579	1393	1251	766
Non-Farm	--	--	--	--	--
Segment 08042	3169	2857	2520	2268	1388
Urban	--	--	--	--	--
Rural	3169	2857	2520	2268	1388
Farm	3169	2857	2520	2268	1388
Non-Farm	--	--	--	--	--
Segment 08043	3185	4061	5487	6593	9866
Urban	--	--	2750	4100	8210
Rural	3185	4061	2737	2493	1656
Farm	3185	2871	2532	2274	1392
Non-Farm	--	1190	205	219	264
Segment 08044	3397	3062	2701	2426	1485
Urban	--	--	--	--	--
Rural	3397	3062	2701	2426	1485
Farm	3397	3062	2701	2426	1485
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08216	2702	2730	2757	2810	2947
Urban	--	--	--	--	--
Rural	2702	2730	2757	2810	2947
Farm	1062	957	844	758	464
Non-Farm	1640	1773	1913	2052	2483
Segment 08217	3460	3359	3286	3260	3129
Urban	--	--	--	--	--
Rural	3460	3359	3286	3260	3129
Farm	1910	1722	1519	1364	835
Non-Farm	1550	1637	1767	1896	2294
Oldham County	13388	14687	16428	18606	27847
Out of Basin	2410	2644	2957	3350	5012
In ORB	10978	12043	13471	15256	22835
Urban	--	--	--	--	2676
Rural	10978	12043	13471	15256	20159
Farm	8810	10330	11620	13206	20159
Non-Farm	2168	1713	1851	2050	--
Segment 08050	1593	1869	2102	2388	3641
Urban	--	--	--	--	--
Rural	1593	1869	2102	2388	3641
Farm	1593	1869	2102	2388	3641
Non-Farm	--	--	--	--	--
Segment 08051	2310	2708	3046	3462	5286
Urban	--	--	--	--	--
Rural	2310	2708	3046	3462	5286
Farm	2310	2708	3046	3462	5286
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08052	4116	3997	4421	4971	7136
Urban	--	--	--	--	2676
Rural	4116	3997	4421	4971	4460
Farm	1948	2284	2570	2921	4460
Non-Farm	2168	1713	1851	2050	--
Segment 08053	1155	1354	1523	1731	2643
Urban	--	--	--	--	--
Rural	1155	1354	1523	1731	2643
Farm	1155	1354	1523	1731	2643
Non-Farm	--	--	--	--	--
Segment 08054	505	592	666	757	1156
Urban	--	--	--	--	--
Rural	505	592	666	757	1156
Farm	505	592	666	757	1156
Non-Farm	--	--	--	--	--
Segment 08212	1155	1354	1523	1731	2643
Urban	--	--	--	--	--
Rural	1155	1354	1523	1731	2643
Farm	1155	1354	1523	1731	2643
Non-Farm	--	--	--	--	--
Segment 08213	144	169	190	216	330
Urban	--	--	--	--	--
Rural	144	169	190	216	330
Farm	144	169	190	216	330
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Pendleton County	9968	9949	10204	10526	11825
Out of Basin	9477	9459	9701	10007	11242
In ORB	491	490	503	519	583
Urban	--	--	--	--	--
Rural	491	490	503	519	583
Farm	491	490	503	519	583
Non-Farm	--	--	--	--	--
Segment 08080	74	74	76	78	88
Urban	--	--	--	--	--
Rural	74	74	76	78	88
Farm	74	74	76	78	88
Non-Farm	--	--	--	--	--
Segment 08082	198	197	202	208	234
Urban	--	--	--	--	--
Rural	198	197	202	208	234
Farm	198	197	202	208	234
Non-Farm	--	--	--	--	--
Segment 08083	121	121	124	129	144
Urban	--	--	--	--	--
Rural	121	121	124	129	144
Farm	121	121	124	129	144
Non-Farm	--	--	--	--	--
Segment 08207	98	98	101	104	117
Urban	--	--	--	--	--
Rural	98	98	101	104	117
Farm	98	98	101	104	117
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Rowan County	12808	17010	14084	15216	16492
Out of Basin	12612	16749	13868	14982	16239
In ORB	196	261	216	234	253
Urban	--	--	--	--	--
Rural	196	261	216	234	253
Farm	196	261	216	234	253
Non-Farm	--	--	--	--	--
Segment 06013	196	261	216	234	253
Urban	--	--	--	--	--
Rural	196	261	216	234	253
Farm	196	261	216	234	253
Non-Farm	--	--	--	--	--
Trimble County	5102	5349	5487	5637	6149
Out of Basin	2175	2280	2339	2427	2696
In ORB	2927	3069	3148	3210	3453
Urban	--	--	--	--	--
Rural	2927	3069	3148	3210	3453
Farm	1845	1533	1467	1389	1193
Non-Farm	1082	1536	1681	1821	2260
Segment 08054	155	129	123	117	101
Urban	--	--	--	--	--
Rural	155	129	123	117	101
Farm	155	129	123	117	101
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08055	155	129	123	117	101
Urban	--	--	--	--	--
Rural	155	129	123	117	101
Farm	155	129	123	117	101
Non-Farm	--	--	--	--	--
Segment 08056	872	909	954	978	1101
Urban	--	--	--	--	--
Rural	872	909	954	978	1101
Farm	155	129	123	117	101
Non-Farm	717	780	821	861	1000
Segment 08057	626	520	498	468	398
Urban	--	--	--	--	--
Rural	626	520	498	468	398
Farm	626	520	498	468	398
Non-Farm	--	--	--	--	--
Segment 08058	116	96	92	88	76
Urban	--	--	--	--	--
Rural	116	96	92	88	76
Farm	116	96	92	88	76
Non-Farm	--	--	--	--	--
Segment 08059	58	48	46	44	38
Urban	--	--	--	--	--
Rural	58	48	46	44	38
Farm	58	48	46	44	38
Non-Farm	--	--	--	--	--
Segment 08060	155	129	123	117	101
Urban	--	--	--	--	--
Rural	155	129	123	117	101
Farm	155	129	123	117	101
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08212	790	1109	1199	1281	1537
Urban	--	--	--	--	--
Rural	790	1109	1199	1281	1537
Farm	425	353	339	321	277
Non-Farm	365	756	860	960	1260
Union County	14537	15882	16340	16920	19238
Out of Basin	--	--	--	--	--
In ORB	14537	15882	16340	16920	19238
Urban	3741	3563	7226	8590	11060
Rural	10796	12319	9114	8330	8178
Farm	7001	8519	5834	4380	2678
Non-Farm	3795	3800	3280	3950	5500
Segment 08015	596	726	498	375	230
Urban	--	--	--	--	--
Rural	596	726	498	375	230
Farm	596	726	498	375	230
Non-Farm	--	--	--	--	--
Segment 08915	21	26	18	13	8
Urban	--	--	--	--	--
Rural	21	26	18	13	8
Farm	21	26	18	13	8
Non-Farm	--	--	--	--	--
Segment 08016	1516	1846	1264	951	582
Urban	--	--	--	--	--
Rural	1516	1846	1264	951	582
Farm	1516	1846	1264	951	582
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08017	214	260	178	134	82
Urban	--	--	--	--	--
Rural	214	260	178	134	82
Farm	214	260	178	134	82
Non-Farm	--	--	--	--	--
Segment 08018	4313	4225	5713	6625	8806
Urban	3741	3563	4460	5300	7000
Rural	572	662	1253	1325	1806
Farm	406	494	338	225	156
Non-Farm	166	168	915	1100	1650
Segment 08019	21	26	18	13	8
Urban	--	--	--	--	--
Rural	21	26	18	13	8
Farm	21	26	18	13	8
Non-Farm	--	--	--	--	--
Segment 08020	44	53	36	26	16
Urban	--	--	--	--	--
Rural	44	53	36	26	16
Farm	44	53	36	26	16
Non-Farm	--	--	--	--	--
Segment 08021	2132	2560	2553	2333	2404
Urban	--	--	--	--	--
Rural	2132	2560	2553	2333	2404
Farm	1966	2392	1638	1233	754
Non-Farm	166	168	915	1100	1650
Segment 08222	1382	1410	1556	1833	2247
Urban	--	--	--	--	--
Rural	1382	1410	1556	1833	2247
Farm	127	155	106	83	47
Non-Farm	1255	1255	1450	1750	2200

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08223	321	390	267	201	123
Urban	--	--	--	--	--
Rural	321	390	267	201	123
Farm	321	390	267	201	123
Non-Farm	--	--	--	--	--
Segment 10001	168	204	140	109	64
Urban	--	--	--	--	--
Rural	168	204	140	109	64
Farm	168	204	140	109	64
Non-Farm	--	--	--	--	--
Segment 10002	3191	3405	3585	3906	4437
Urban	--	--	2766	3290	4060
Rural	3191	3405	819	616	377
Farm	983	1196	819	616	377
Non-Farm	2208	2209	--	--	--
Segment 10003	214	260	178	139	80
Urban	--	--	--	--	--
Rural	214	260	178	139	80
Farm	214	260	178	139	80
Non-Farm	--	--	--	--	--
Segment 10004	404	491	336	262	151
Urban	--	--	--	--	--
Rural	404	491	336	262	151
Farm	404	491	336	262	151
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Webster County	14244	13282	13420	13684	15267
Out of Basin	3009	2806	2835	2874	3207
In ORB	11235	10476	10585	10810	12060
Urban	3771	4270	7200	7467	9275
Rural	7464	6206	3385	3343	2785
Farm	5580	4208	3385	3343	2785
Non-Farm	1884	1998	--	--	--
Segment 08021	991	747	601	593	494
Urban	--	--	--	--	--
Rural	991	747	601	593	494
Farm	991	747	601	593	494
Non-Farm	--	--	--	--	--
Segment 10004	5307	4579	4827	4890	4922
Urban	--	--	2750	2837	3211
Rural	5307	4579	2077	2053	1711
Farm	3423	2581	2077	2053	1711
Non-Farm	1884	1998	--	--	--
Segment 10005	818	617	496	487	406
Urban	--	--	--	--	--
Rural	818	617	496	487	406
Farm	818	617	496	487	406
Non-Farm	--	--	--	--	--
Segment 10006	1958	2190	2269	2359	3068
Urban	1885	2135	2225	2315	3032
Rural	73	55	44	44	36
Farm	73	55	44	44	36
Non-Farm	--	--	--	--	--

EXHIBIT A-2t (Continued) POPULATION DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10007	58	44	35	35	29
Urban	--	--	--	--	--
Rural	58	44	35	35	29
Farm	58	44	35	35	29
Non-Farm	--	--	--	--	--
Segment 10008	2103	2299	2357	2446	3141
Urban	1886	2135	2225	2315	3032
Rural	217	164	132	131	109
Farm	217	164	132	131	109
Non-Farm	--	--	--	--	--

EXHIBIT A-3t HOUSING DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Thirty-four County Total	468698	529613	561208	598087	724057
Out of Basin	216693	243756	257943	278873	358187
In ORB	252005	285857	303265	319214	365870
Urban	174086	203816	220922	236677	275112
Rural	77919	82041	82343	82537	90758
Farm	62031	65526	66706	69297	77179
Non-Farm	15888	16515	15637	13240	13579
Ballard County	3159	3159	3159	3159	3159
Out of Basin	1797	1797	1797	1797	1797
In ORB	1362	1362	1362	1362	1362
Urban	--	--	--	--	--
Rural	1362	1362	1362	1362	1362
Farm	798	798	798	798	798
Non-Farm	564	564	564	564	564
Segment 08001	782	782	782	782	782
Urban	--	--	--	--	--
Rural	782	782	782	782	782
Farm	383	383	383	383	383
Non-Farm	399	399	399	399	399
Segment 08002	458	458	458	458	458
Urban	--	--	--	--	--
Rural	458	458	458	458	458
Farm	293	293	293	293	293
Non-Farm	165	165	165	165	165
Segment 08003	57	57	57	57	57
Urban	--	--	--	--	--
Rural	57	57	57	57	57
Farm	57	57	57	57	57
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08004	13	13	13	13	13
Urban	--	--	--	--	--
Rural	13	13	13	13	13
Farm	13	13	13	13	13
Non-Farm	--	--	--	--	--
Segment 08226	32	32	32	32	32
Urban	--	--	--	--	--
Rural	32	32	32	32	32
Farm	32	32	32	32	32
Non-Farm	--	--	--	--	--
Segment 08227	20	20	20	20	20
Urban	--	--	--	--	--
Rural	20	20	20	20	20
Farm	20	20	20	20	20
Non-Farm	--	--	--	--	--
Boone County	6406	9566	11088	13016	21098
Out of Basin	566	849	985	1143	1646
In ORB	5840	8717	10103	11873	19452
Urban	1704	3340	4242	5133	8264
Rural	4136	5377	5861	6740	11188
Farm	4136	5377	5861	6740	11188
Non-Farm	--	--	--	--	--
Segment 08068	1192	1553	1694	1948	3234
Urban	--	--	--	--	--
Rural	1192	1553	1694	1948	3234
Farm	1192	1553	1694	1948	3234
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08069	76	98	107	123	204
Urban	--	--	--	--	--
Rural	76	98	107	123	204
Farm	76	98	107	123	204
Non-Farm	--	--	--	--	--
Segment 08070	152	197	215	247	410
Urban	--	--	--	--	--
Rural	152	197	215	247	410
Farm	152	197	215	247	410
Non-Farm	--	--	--	--	--
Segment 08071	2489	4353	5346	6404	10374
Urban	1704	3340	4242	5133	8264
Rural	785	1013	1104	1271	2110
Farm	785	1013	1104	1271	2110
Non-Farm	--	--	--	--	--
Segment 08072	265	345	376	432	717
Urban	--	--	--	--	--
Rural	265	345	376	432	717
Farm	265	345	376	432	717
Non-Farm	--	--	--	--	--
Segment 08073	625	814	887	1020	1693
Urban	--	--	--	--	--
Rural	625	814	887	1020	1693
Farm	625	814	887	1020	1693
Non-Farm	--	--	--	--	--
Segment 08074	114	148	161	185	307
Urban	--	--	--	--	--
Rural	114	148	161	185	307
Farm	114	148	161	185	307
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08075	38	49	53	61	101
Urban	--	--	--	--	--
Rural	38	49	53	61	101
Farm	38	49	53	61	101
Non-Farm	--	--	--	--	--
Segment 08076	170	222	242	278	461
Urban	--	--	--	--	--
Rural	170	222	242	278	461
Farm	170	222	242	278	461
Non-Farm	--	--	--	--	--
Segment 08077	132	173	189	217	360
Urban	--	--	--	--	--
Rural	132	173	189	217	360
Farm	132	173	189	217	360
Non-Farm	--	--	--	--	--
Segment 08209	208	271	295	339	563
Urban	--	--	--	--	--
Rural	208	271	295	339	563
Farm	208	271	295	339	563
Non-Farm	--	--	--	--	--
Segment 08210	379	494	538	619	1028
Urban	--	--	--	--	--
Rural	379	494	538	619	1028
Farm	379	494	538	619	1028
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Boyd County	18508	18508	19269	20224	22569
Out of Basin	5980	5980	6219	6219	6717
In ORB	12528	12528	13050	14005	15852
Urban	11989	11989	12349	13213	14799
Rural	539	539	701	792	1053
Farm	539	539	701	792	1053
Non-Farm	--	--	--	--	--
Segment 08106	51	51	66	75	100
Urban	--	--	--	--	--
Rural	51	51	66	75	100
Farm	51	51	66	75	100
Non-Farm	--	--	--	--	--
Segment 08107	32	32	42	47	63
Urban	--	--	--	--	--
Rural	32	32	42	47	63
Farm	32	32	42	47	63
Non-Farm	--	--	--	--	--
Segment 08108	1232	1232	1274	1365	1535
Urban	1208	1208	1244	1331	1490
Rural	24	24	30	34	45
Farm	24	24	30	34	45
Non-Farm	--	--	--	--	--
Segment 08200	18	18	23	26	36
Urban	--	--	--	--	--
Rural	18	18	23	26	36
Farm	18	18	23	26	36
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08201	10790	10790	11118	111896	13326
Urban	10781	10781	11106	11882	13307
Rural	9	9	12	14	19
Farm	9	9	12	14	19
Non-Farm	--	--	--	--	--
Segment 06004	405	405	527	596	792
Urban	--	--	--	--	--
Rural	405	405	527	596	792
Farm	405	405	527	596	792
Non-Farm	--	--	--	--	--
Bracken County	2492	2492	2542	2618	2932
Out of Basin	786	786	802	802	826
In ORB	1706	1706	1740	1816	2106
Urban	--	--	--	--	--
Rural	1706	1706	1740	1816	2106
Farm	996	996	996	1017	1139
Non-Farm	710	710	744	799	967
Segment 08083	42	42	42	43	48
Urban	--	--	--	--	--
Rural	42	42	42	43	48
Farm	42	42	42	43	48
Non-Farm	--	--	--	--	--
Segment 08084	67	67	67	68	76
Urban	--	--	--	--	--
Rural	67	67	67	68	76
Farm	67	67	67	68	76
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08085	639	639	650	676	779
Urban	--	--	--	--	--
Rural	639	639	650	676	779
Farm	422	422	422	432	484
Non-Farm	217	217	228	244	295
Segment 08086	67	67	67	68	76
Urban	--	--	--	--	--
Rural	67	67	67	68	76
Farm	67	67	67	68	76
Non-Farm	-	--	--	--	--
Segment 08087	220	220	220	224	251
Urban	--	--	--	--	--
Rural	220	220	220	224	251
Farm	220	220	220	224	251
Non-Farm	--	--	--	--	--
Segment 08206	612	612	635	677	809
Urban	--	--	--	--	--
Rural	612	612	635	677	809
Farm	118	118	118	122	137
Non-Farm	494	494	517	555	672
Segment 08207	59	59	59	60	67
Urban	--	--	--	--	--
Rural	59	59	59	60	67
Farm	59	59	59	60	67
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Breckinridge County	4738	5688	5916	6212	7579
Out of Basin	1392	1671	1738	1825	2271
In ORB	3346	4017	4178	4387	5308
Urban	--	--	--	--	--
Rural	3346	4017	4178	4387	5308
Farm	2352	2517	2517	2562	2716
Non-Farm	994	1500	1661	1825	2592
Segment 08032	556	619	639	652	692
Urban	--	--	--	--	--
Rural	556	619	639	652	692
Farm	556	619	639	652	692
Non-Farm	--	--	--	--	--
Segment 08033	33	36	37	38	40
Urban	--	--	--	--	--
Rural	33	36	37	38	40
Farm	33	36	37	38	40
Non-Farm	--	--	--	--	--
Segment 08034	40	43	45	46	49
Urban	--	--	--	--	--
Rural	40	43	45	46	49
Farm	40	43	45	46	49
Non-Farm	--	--	--	--	--
Segment 08035	1372	1666	1731	1807	2152
Urban	--	--	--	--	--
Rural	1372	1666	1731	1807	2152
Farm	965	1088	1123	1140	1205
Non-Farm	407	578	608	667	947

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08036	46	50	52	53	56
Urban	--	--	--	--	--
Rural	46	50	52	53	56
Farm	46	50	52	53	56
Non-Farm	--	--	--	--	--
Segment 08037	124	136	141	144	153
Urban	--	--	--	--	--
Rural	124	136	141	144	153
Farm	124	136	141	144	153
Non-Farm	--	--	--	--	--
Segment 08039	13	14	15	15	16
Urban	--	--	--	--	--
Rural	13	14	15	15	16
Farm	13	14	15	15	16
Non-Farm	--	--	--	--	--
Segment 08042	628	785	820	877	1134
Urban	--	--	--	--	--
Rural	628	785	820	877	1134
Farm	271	301	310	316	337
Non-Farm	357	484	510	561	797
Segment 08217	534	668	698	755	1016
Urban	--	--	--	--	--
Rural	534	668	698	755	1016
Farm	135	150	155	158	167
Non-Farm	399	518	543	597	849

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Caldwell County	4571	4936	5237	5544	6959
Out of Basin	3050	3294	4392	3736	4857
In ORB	1521	1642	1745	1808	2102
Urban	197	236	269	288	400
Rural	1324	1406	1476	1520	1702
Farm	1324	1406	1476	1520	1702
Non-Farm	--	--	--	--	--
Segment 10005	46	50	53	55	64
Urban	--	--	--	--	--
Rural	46	50	53	55	64
Farm	46	50	53	55	64
Non-Farm	--	--	--	--	--
Segment 10007	20	21	22	23	27
Urban	--	--	--	--	--
Rural	20	21	22	23	27
Farm	20	21	22	23	27
Non-Farm	--	--	--	--	--
Segment 10010	671	724	770	798	928
Urban	--	--	--	--	--
Rural	671	724	770	798	928
Farm	671	724	770	798	928
Non-Farm	--	--	--	--	--
Segment 10011	561	605	643	666	774
Urban	197	236	269	288	328
Rural	364	369	374	378	446
Farm	364	369	374	378	446
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10012	145	156	166	172	200
Urban	--	--	--	--	--
Rural	145	156	166	172	200
Farm	145	156	166	172	200
Non-Farm	--	--	--	--	--
Segment 10013	78	86	91	94	109
Urban	--	--	--	--	--
Rural	78	86	91	94	109
Farm	78	86	91	94	109
Non-Farm	--	--	--	--	--
Campbell County	27619	28568	30772	32949	39402
Out of Basin	9779	9948	10595	11337	13491
In ORB	17840	18620	20177	21612	25911
Urban	15605	16385	17942	19198	23038
Rural	2235	2235	2235	2414	2873
Farm	2235	2235	2235	2414	2873
Non-Farm	--	--	--	--	--
Segment 08078	517	540	585	626	751
Urban	--	--	--	--	--
Rural	517	540	585	626	751
Farm	517	540	585	626	751
Non-Farm	--	--	--	--	--
Segment 08079	74	77	83	89	109
Urban	--	--	--	--	--
Rural	74	77	83	89	109
Farm	74	77	83	89	109
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08080	2243	2344	2540	2721	3262
Urban	1181	1240	1358	1453	1744
Rural	1062	1104	1182	1268	1518
Farm	1062	1104	1182	1268	1518
Non-Farm	--	--	--	--	--
Segment 08081	149	154	168	180	216
Urban	--	--	--	--	--
Rural	149	154	168	180	216
Farm	149	154	168	180	216
Non-Farm	--	--	--	--	--
Segment 08207	345	360	390	418	501
Urban	--	--	--	--	--
Rural	345	360	390	418	501
Farm	345	360	390	418	501
Non-Farm	--	--	--	--	--
Segment 08208	14512	15145	16411	17578	21074
Urban	14512	15145	16411	17578	21074
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Carroll County	2621	2804	2917	3063	3584
Out of Basin	2113	2261	2351	2462	2983
In ORB	508	543	566	601	601
Urban	--	--	--	--	--
Rural	508	543	566	601	601
Farm	396	416	424	445	445
Non-Farm	112	127	142	156	156

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08060	50	53	54	57	57
Urban	--	--	--	--	--
Rural	50	53	54	57	57
Farm	50	53	54	57	57
Non-Farm	--	--	--	--	--
Segment 08061	92	97	99	104	104
Urban	--	--	--	--	--
Rural	92	97	99	104	104
Farm	92	97	99	104	104
Non-Farm	--	--	--	--	--
Segment 08062	26	27	28	29	29
Urban	--	--	--	--	--
Rural	26	27	28	29	29
Farm	26	27	28	29	29
Non-Farm	--	--	--	--	--
Segment 08211	231	251	268	288	288
Urban	--	--	--	--	--
Rural	231	251	268	288	288
Farm	119	124	126	132	132
Non-Farm	112	127	142	156	156
Segment 08212	109	115	117	123	123
Urban	--	--	--	--	--
Rural	109	115	117	123	123
Farm	109	115	117	123	123
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Carter County	8783	8783	8783	8783	8783
Out of Basin	--	--	--	--	--
In ORB	8783	8783	8783	8783	8783
Urban	--	--	--	1217	1509
Rural	8783	8783	8783	7566	7274
Farm	7212	7212	7212	7212	6789
Non-Farm	1571	1571	1571	354	485
Segment 06002	55	55	55	55	55
Urban	--	--	--	--	--
Rural	55	55	55	55	55
Farm	55	55	55	55	55
Non-Farm	--	--	--	--	--
Segment 06004	350	350	350	350	350
Urban	--	--	--	--	--
Rural	350	350	350	350	350
Farm	350	350	350	350	350
Non-Farm	--	--	--	--	--
Segment 06005	239	239	239	239	239
Urban	--	--	--	--	--
Rural	239	239	239	239	239
Farm	239	239	239	239	239
Non-Farm	--	--	--	--	--
Segment 06006	294	294	294	294	294
Urban	--	--	--	--	--
Rural	294	294	294	294	294
Farm	294	294	294	294	294
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06007	1451	1451	1451	1451	1451
Urban	--	--	--	974	974
Rural	1451	1451	1451	477	477
Farm	477	477	477	477	477
Non-Farm	974	974	974	--	--
Segment 06008	202	202	202	202	202
Urban	--	--	--	--	--
Rural	202	202	202	202	202
Farm	202	202	202	202	202
Non-Farm	--	--	--	--	--
Segment 06009	331	331	331	331	331
Urban	--	--	--	--	--
Rural	331	331	331	331	331
Farm	331	331	331	331	331
Non-Farm	--	--	--	--	--
Segment 06010	331	331	331	331	331
Urban	--	--	--	--	--
Rural	331	331	331	331	331
Farm	331	331	331	331	331
Non-Farm	--	--	--	--	--
Segment 06011	202	202	202	202	202
Urban	--	--	--	--	--
Rural	202	202	202	202	202
Farm	202	202	202	202	202
Non-Farm	--	--	--	--	--
Segment 06012	1079	1079	1079	1079	1079
Urban	--	--	--	--	--
Rural	1079	1079	1079	1079	1079
Farm	1079	1079	1079	1079	1079
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06013	423	423	423	423	423
Urban	--	--	--	--	--
Rural	423	423	423	423	423
Farm	423	423	423	423	423
Non-Farm	--	--	--	--	--
Segment 11004	129	129	129	129	129
Urban	--	--	--	--	--
Rural	129	129	129	129	129
Farm	129	129	129	129	129
Non-Farm	--	--	--	--	--
Segment 11005	896	896	896	896	896
Urban	--	--	--	--	--
Rural	896	896	896	896	896
Farm	896	896	896	896	896
Non-Farm	--	--	--	--	--
Segment 11006	2801	2801	2801	2801	2801
Urban	--	--	--	--	--
Rural	2801	2801	2801	2801	2801
Farm	2204	2204	2204	2204	2204
Non-Farm	597	597	597	597	597
Christian	15297	16250	17550	18954	24451
Out of Basin	14449	15349	16577	17981	23478
In ORB	848	901	973	973	973
Urban	--	--	--	--	--
Rural	848	901	973	973	973
Farm	679	719	791	791	791
Non-Farm	169	182	182	182	182

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10013	95	101	111	111	111
Urban	--	--	--	--	--
Rural	95	101	111	111	111
Farm	95	101	111	111	111
Non-Farm	--	--	--	--	--
Segment 10014	753	800	862	862	862
Urban	--	--	--	--	--
Rural	753	800	862	862	862
Farm	584	618	680	680	680
Non-Farm	169	182	182	182	182
Crittenden County	3191	3370	3505	3624	4220
Out of Basin	467	493	514	524	580
In ORB	2724	2877	2991	3100	3640
Urban	--	1194	1283	1372	1791
Rural	2724	1683	1708	1728	1849
Farm	1814	1683	1708	1728	1849
Non-Farm	910	--	--	--	--
Segment 08011	211	223	232	240	282
Urban	--	--	--	--	--
Rural	211	223	232	240	282
Farm	211	223	232	240	282
Non-Farm	--	--	--	--	--
Segment 08012	256	270	281	291	341
Urban	--	--	--	--	--
Rural	256	270	281	291	341
Farm	256	270	281	291	341
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08013	1441	1522	1582	1640	1926
Urban	--	1194	1249	1303	1565
Rural	1441	328	333	337	361
Farm	531	328	333	337	361
Non-Farm	910	--	--	--	--
Segment 08014	62	65	68	70	82
Urban	--	--	--	--	--
Rural	62	65	68	70	82
Farm	62	65	68	70	82
Non-Farm	--	--	--	--	--
Segment 08224	122	129	134	139	163
Urban	--	--	--	--	--
Rural	122	129	134	139	163
Farm	122	129	134	139	163
Non-Farm	--	--	--	--	--
Segment 10001	44	47	49	51	60
Urban	--	--	--	--	--
Rural	44	47	49	51	60
Farm	44	47	49	51	60
Non-Farm	--	--	--	--	--
Segment 10003	45	47	49	51	60
Urban	--	--	--	--	--
Rural	45	47	49	51	60
Farm	45	47	49	51	60
Non-Farm	--	--	--	--	--
Segment 10005	527	557	579	600	705
Urban	--	--	--	--	--
Rural	527	557	579	600	705
Farm	527	557	579	600	705
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10007	16	17	17	18	21
Urban	--	--	--	--	--
Rural	16	17	17	18	21
Farm	16	17	17	18	21
Non-Farm	--	--	--	--	--
Daviess County	22455	25314	26875	29082	37143
Out of Basin	13524	15215	16128	17418	22121
In ORB	8931	10099	10747	11664	15022
Urban	6931	8099	8747	9534	12394
Rural	2000	2000	2000	2130	2628
Farm	1758	1758	1758	1870	2300
Non-Farm	242	242	242	260	328
Segment 08024	80	80	80	86	106
Urban	--	--	--	--	--
Rural	80	80	80	86	106
Farm	80	80	80	86	106
Non-Farm	--	--	--	--	--
Segment 08025	224	224	224	238	293
Urban	--	--	--	--	--
Rural	224	224	224	238	293
Farm	224	224	224	238	293
Non-Farm	--	--	--	--	--
Segment 08026	590	590	590	627	770
Urban	--	--	--	--	--
Rural	590	590	590	627	770
Farm	590	590	590	627	770
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08027	80	80	80	86	106
Urban	--	--	--	--	--
Rural	80	80	80	86	106
Farm	80	80	80	86	106
Non-Farm	--	--	--	--	--
Segment 08028	560	560	560	595	732
Urban	--	--	--	--	--
Rural	560	560	560	595	732
Farm	560	560	560	595	732
Non-Farm	--	--	--	--	--
Segment 08219	7173	8341	8989	9794	12722
Urban	6961	8099	8747	9534	12394
Rural	212	242	242	260	328
Farm	--	--	--	--	--
Non-Farm	212	242	242	260	328
Segment 08220	224	224	224	238	293
Urban	--	--	--	--	--
Rural	224	224	224	238	293
Farm	224	224	224	238	293
Non-Farm	--	--	--	--	--
Elliott County	2866	2866	2866	2866	2866
Out of Basin	117	117	117	117	117
In ORB	2749	2749	2749	2749	2749
Urban	--	--	--	--	--
Rural	2749	2749	2749	2749	2749
Farm	2656	2656	2656	2656	2656
Non-Farm	93	93	93	93	93

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06010	172	172	172	172	172
Urban	--	--	--	--	--
Rural	172	172	172	172	172
Farm	172	172	172	172	172
Non-Farm	--	--	--	--	--
Segment 06012	621	621	621	621	621
Urban	--	--	--	--	--
Rural	621	621	621	621	621
Farm	621	621	621	621	621
Non-Farm	--	--	--	--	--
Segment 06013	1956	1956	1956	1956	1956
Urban	--	--	--	--	--
Rural	1956	1956	1956	1956	1956
Farm	1863	1863	1863	1863	1863
Non-Farm	93	93	93	93	93
Gallatin County	1215	1300	1414	1567	2156
Out of Basin	238	255	278	370	370
In ORB	977	1045	1136	1197	1786
Urban	--	--	--	--	804
Rural	977	1045	1136	1197	982
Farm	658	658	687	687	982
Non-Farm	319	387	449	510	--
Segment 08062	72	77	84	89	133
Urban	--	--	--	--	--
Rural	72	77	84	89	133
Farm	72	77	84	89	133
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08063	32	34	37	39	58
Urban	--	--	--	--	--
Rural	32	34	37	39	58
Farm	32	34	37	39	58
Non-Farm	--	--	--	--	--
Segment 08064	47	51	56	59	88
Urban	--	--	--	--	--
Rural	47	51	56	59	88
Farm	47	51	56	59	88
Non-Farm	--	--	--	--	--
Segment 08065	80	85	92	97	145
Urban	--	--	--	--	--
Rural	80	85	92	97	145
Farm	80	85	92	97	145
Non-Farm	--	--	--	--	--
Segment 08066	88	94	102	107	160
Urban	--	--	--	--	--
Rural	88	94	102	107	160
Farm	88	94	102	107	160
Non-Farm	--	--	--	--	--
Segment 08067	40	43	47	50	75
Urban	--	--	--	--	--
Rural	40	43	47	50	75
Farm	40	43	47	50	75
Non-Farm	--	--	--	--	--
Segment 08068	128	137	149	157	234
Urban	--	--	--	--	--
Rural	128	137	149	157	234
Farm	128	137	149	157	234
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08210	466	498	541	570	850
Urban	--	--	--	--	804
Rural	466	498	541	570	46
Farm	147	111	92	60	46
Non-Farm	319	387	449	510	--
Segment 08211	24	26	28	29	43
Urban	--	--	--	--	--
Rural	24	26	28	29	43
Farm	24	26	28	29	43
Non-Farm	--	--	--	--	--
Greenup County	10481	11897	12675	13486	15913
Out of Basin	--	--	--	--	--
In ORB	10481	11897	12675	13486	15913
Urban	1343	2645	3238	5828	10665
Rural	9138	9252	9437	7658	5248
Farm	5915	5915	5915	5915	3902
Non-Farm	3223	3337	3522	1743	1346
Segment 08099	35	35	35	35	35
Urban	--	--	--	--	--
Rural	35	35	35	35	35
Farm	35	35	35	35	35
Non-Farm	--	--	--	--	--
Segment 08100	52	52	52	52	52
Urban	--	--	--	--	--
Rural	52	52	52	52	52
Farm	52	52	52	52	52
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08101	70	70	70	70	70
Urban	--	--	--	--	--
Rural	70	70	70	70	70
Farm	70	70	70	70	70
Non-Farm	--	-	--	--	--
Segment 08102	105	105	105	105	105
Urban	--	--	--	--	--
Rural	105	105	105	105	105
Farm	105	105	105	105	105
Non-Farm	--	--	--	--	--
Segment 08103	350	458	583	583	960
Urban	--	--	--	--	925
Rural	350	458	583	583	35
Farm	35	35	35	35	35
Non-Farm	315	423	548	548	--
Segment 08104	2385	3346	3966	4777	6074
Urban	1343	2645	3238	4742	6039
Rural	1042	701	728	35	35
Farm	35	35	35	35	35
Non-Farm	1007	666	693	--	--
Segment 08105	52	52	52	52	52
Urban	--	--	--	--	--
Rural	52	52	52	52	52
Farm	52	52	52	52	52
Non-Farm	--	--	--	--	--
Segment 08106	270	472	472	472	472
Urban	--	--	--	--	--
Rural	270	472	472	472	472
Farm	126	126	126	126	126
Non-Farm	144	346	346	346	346

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08201	583	728	738	738	1137
Urban	--	--	--	721	1120
Rural	583	728	738	17	17
Farm	17	17	17	17	17
Non-Farm	566	711	721	--	--
Segment 08202	524	524	534	534	847
Urban	--	--	--	--	812
Rural	524	524	534	534	35
Farm	35	35	35	35	35
Non-Farm	489	489	499	499	--
Segment 08203	617	617	617	617	617
Urban	--	--	--	--	--
Rural	617	617	617	617	617
Farm	157	157	157	157	157
Non-Farm	460	460	460	460	460
Segment 08204	381	381	394	394	435
Urban	--	--	-	--	--
Rural	381	381	394	394	435
Farm	139	139	139	139	139
Non-Farm	242	242	255	255	296
Segment 08205	35	35	35	35	35
Urban	--	--	--	--	--
Rural	35	35	35	35	35
Farm	35	35	35	35	35
Non-Farm	--	--	--	--	--
Segment 06001	547	547	547	547	547
Urban	--	--	--	--	--
Rural	547	547	547	547	547
Farm	547	547	547	547	547
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06002	1199	1199	1199	1199	1199
Urban	--	--	--	--	--
Rural	1199	1199	1199	1199	1199
Farm	1199	1199	1199	1199	1199
Non-Farm	--	--	--	--	--
Segment 06003	35	35	35	35	35
Urban	--	--	--	--	--
Rural	35	35	35	35	35
Farm	35	35	35	35	35
Non-Farm	--	--	--	--	--
Segment 06004	582	582	582	582	582
Urban	--	--	--	--	--
Rural	582	582	582	582	582
Farm	582	582	582	582	582
Non-Farm	--	--	--	--	--
Segment 11001	1222	1222	1222	1222	1222
Urban	--	--	--	--	--
Rural	1222	1222	1222	1222	1222
Farm	1222	1222	1222	1222	1222
Non-Farm	--	--	--	--	--
Segment 11002	365	365	365	365	365
Urban	--	--	--	--	--
Rural	365	365	365	365	365
Farm	365	365	365	365	365
Non-Farm	--	--	--	--	--
Segment 11003	172	172	172	172	172
Urban	--	--	--	--	--
Rural	172	172	172	172	172
Farm	172	172	172	172	172
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 11004	883	883	883	883	883
Urban	--	--	--	--	--
Rural	883	883	883	883	883
Farm	883	883	883	883	883
Non-Farm	--	--	--	--	--
Segment 11006	17	17	17	17	17
Urban	--	--	--	--	--
Rural	17	17	17	17	17
Farm	17	17	17	17	17
Non-Farm	--	--	--	--	--
Hancock County	1780	2368	2628	2917	4413
Out of Basin	392	521	578	642	642
In ORB	1388	1847	2050	2275	3771
Urban	--	--	--	--	--
Rural	1388	1847	2050	2275	3771
Farm	891	891	891	935	1895
Non-Farm	497	956	1159	1340	1876
Segment 08028	494	494	494	521	1025
Urban	--	--	--	--	--
Rural	494	494	494	521	1025
Farm	494	494	494	521	1025
Non-Farm	--	--	--	--	--
Segment 08928	12	12	12	13	28
Urban	--	--	--	--	--
Rural	12	12	12	13	28
Farm	12	12	12	13	28
Non-Farm	--	--	--	--	--
Segment 08029	112	112	112	118	253
Urban	--	--	--	--	--
Rural	112	112	112	118	253
Farm	112	112	112	118	253
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08030	112	112	112	118	253
Urban	--	--	--	--	--
Rural	112	112	112	118	253
Farm	112	112	112	118	253
Non-Farm	--	--	--	--	--
Segment 08031	68	68	68	72	155
Urban	--	--	--	--	--
Rural	68	68	68	72	155
Farm	68	68	68	72	155
Non-Farm	--	--	--	--	--
Segment 08032	31	31	31	33	70
Urban	--	--	--	--	--
Rural	31	31	31	33	70
Farm	31	31	31	33	70
Non-Farm	--	--	--	--	--
Segment 08217	12	12	12	13	28
Urban	--	--	--	--	--
Rural	12	12	12	13	28
Farm	12	12	12	13	28
Non-Farm	--	--	--	--	--
Segment 08218	337	467	578	681	943
Urban	--	--	--	--	--
Rural	337	467	578	681	943
Farm	44	44	44	47	85
Non-Farm	293	423	534	634	858
Segment 08219	210	539	631	706	1016
Urban	--	--	--	--	--
Rural	210	539	631	706	1016
Farm	6	6	6	6	13
Non-Farm	204	533	625	700	1003

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Hardin County	14899	18409	19698	21061	24852
Out of Basin	13165	16266	17405	18623	21975
In ORB	1734	2143	2293	2438	2877
Urban	--	701	771	837	1046
Rural	1734	1442	1522	1601	1831
Farm	820	1033	1113	1187	1398
Non-Farm	914	409	409	414	433
Segment 08035	20	28	30	32	38
Urban	--	--	--	--	--
Rural	20	28	30	32	38
Farm	20	28	30	32	38
Non-Farm	--	--	--	--	--
Segment 08042	141	167	180	193	227
Urban	--	--	--	--	--
Rural	141	167	180	193	227
Farm	141	167	180	193	227
Non-Farm	--	--	--	--	--
Segment 08044	955	1330	1449	1563	1899
Urban	--	701	771	837	1046
Rural	955	629	678	726	853
Farm	503	629	678	726	853
Non-Farm	452	--	--	--	--
Segment 08216	618	618	634	650	713
Urban	--	--	--	--	--
Rural	618	618	634	650	713
Farm	210	210	224	235	276
Non-Farm	408	408	410	415	437

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Henderson County	11165	12214	12873	13533	15877
Out of Basin	1758	1924	2020	2121	2609
In ORB	9407	10290	10853	11412	13268
Urban	7019	7902	8298	8796	10203
Rural	2388	2388	2555	2616	3065
Farm	2090	2090	2246	2291	2681
Non-Farm	298	298	309	325	384
Segment 08019	39	39	42	43	51
Urban	--	--	--	--	--
Rural	39	39	42	43	51
Farm	39	39	42	43	51
Non-Farm	--	--	--	--	--
Segment 08020	39	39	42	43	51
Urban	--	--	--	--	--
Rural	39	39	42	43	51
Farm	39	39	42	43	51
Non-Farm	--	--	--	--	--
Segment 08021	1125	1125	1203	1237	1451
Urban	--	--	--	--	--
Rural	1125	1125	1203	1237	1451
Farm	827	827	889	907	1062
Non-Farm	298	298	314	330	389
Segment 08022	39	39	42	43	51
Urban	--	--	--	--	--
Rural	39	39	42	43	51
Farm	39	39	42	43	51
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08023	3981	4327	4564	4802	5578
Urban	2519	3477	3650	3870	4487
Rural	1462	850	914	932	1091
Farm	1462	850	914	932	1091
Non-Farm	--	--	--	--	--
Segment 08220	32	32	34	35	41
Urban	--	--	--	--	--
Rural	32	32	34	35	41
Farm	32	32	34	35	41
Non-Farm	--	--	--	--	--
Segment 08221	4011	4548	4774	5055	5865
Urban	3888	4425	4641	4919	5705
Rural	123	123	133	136	160
Farm	123	123	133	136	160
Non-Farm	--	--	--	--	--
Segment 08222	141	141	152	154	180
Urban	--	--	--	--	--
Rural	141	141	152	154	180
Farm	141	141	152	154	180
Non-Farm	--	--	--	--	--
Henry County	3737	3996	4196	4447	5471
Out of Basin	3669	3923	4119	4366	5370
In ORB	68	73	77	81	101
Urban	--	--	--	--	--
Rural	68	73	77	81	101
Farm	68	73	77	81	101
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08052	68	73	77	81	101
Urban	--	--	--	--	--
Rural	68	73	77	81	101
Farm	68	73	77	81	101
Non-Farm	--	--	--	--	--
Hopkins County	12651	13487	13802	14368	15805
Out of Basin	8720	9296	9481	9481	10918
In ORB	3931	4191	4321	4887	4887
Urban	1904	1000	1130	1198	1198
Rural	2027	3191	3191	3689	3689
Farm	2027	2371	2371	2869	2869
Non-Farm	--	820	820	820	820
Segment 10008	1124	1215	1215	1474	1474
Urban	--	--	--	--	--
Rural	1124	1215	1215	1474	1474
Farm	1124	1215	1215	1474	1474
Non-Farm	--	--	--	--	--
Segment 10009	1106	1225	1225	1309	1309
Urban	733	--	--	--	--
Rural	373	1225	1225	1309	1309
Farm	373	406	406	490	490
Non-Farm	--	819	819	819	819
Segment 10010	166	181	181	217	217
Urban	--	--	--	--	--
Rural	166	181	181	217	217
Farm	166	181	181	217	217
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10012	1138	1138	1268	1365	1365
Urban	1000	1000	1128	1199	1199
Rural	138	138	140	166	166
Farm	138	138	140	166	166
Non-Farm	--	--	--	--	--
Segment 10014	397	432	432	522	522
Urban	--	--	--	--	--
Rural	397	432	432	522	522
Farm	397	432	432	522	522
Non-Farm	--	--	--	--	--
Jefferson County	188564	226402	242250	260661	324446
Out of Basin	76934	92372	98838	110939	159752
In ORB	111630	134030	143412	149722	164694
Urban	111630	134030	143412	149722	164694
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08045	24769	28811	30828	32061	35267
Urban	24769	28811	30828	32061	35267
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08046	12942	15091	16147	16793	18472
Urban	12942	15091	16147	16793	18472
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08047	31457	41062	43936	46268	50897
Urban	31457	41062	43936	46268	50897
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08048	1179	1372	1468	1527	1680
Urban	1179	1372	1468	1527	1680
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08049	11796	13720	14680	15267	16794
Urban	11796	13720	14680	15267	16794
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08050	11796	13394	14332	14905	16396
Urban	11796	13394	14332	14905	16396
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08213	6012	6997	7487	7786	8565
Urban	6012	6997	7487	7786	8565
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08214	11679	13583	14534	15115	16623
Urban	11679	13583	14534	15115	16623
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08215(1)	--	--	--	--	--
Urban	--	--	--	--	--
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Kenton County	35263	37738	40380	42890	50702
Out of Basin	27621	29554	31623	33520	39553
In ORB	7642	8184	8757	9370	11149
Urban	7579	8110	8678	9285	11049
Rural	63	74	79	85	100
Farm	63	74	79	85	100
Non-Farm	--	--	--	--	--
Segment 08068	63	74	79	85	100
Urban	--	--	--	--	--
Rural	63	74	79	85	100
Farm	63	74	79	85	100
Non-Farm	--	--	--	--	--
Segment 08077	1954	2092	2238	2395	2853
Urban	1954	2092	2238	2395	2853
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08977	837	897	960	1027	1222
Urban	837	897	960	1027	1222
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--

(1) All industrial and commercial land.

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08208	1198	1280	1370	1466	1745
Urban	1198	1280	1370	1466	1745
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Segment 08209	3590	3842	4111	4398	5230
Urban	3590	3842	4111	4398	5230
Rural	--	--	--	--	--
Farm	--	--	--	--	--
Non-Farm	--	--	--	--	--
Lawrence County	5767	5767	5767	5767	5767
Out of Basin	5317	5317	5317	5317	5317
In ORB	450	450	450	450	450
Urban	--	--	--	--	--
Rural	450	450	450	450	450
Farm	450	450	450	450	450
Non-Farm	--	--	--	--	--
Segment 06004	198	198	198	198	198
Urban	--	--	--	--	--
Rural	198	198	198	198	198
Farm	198	198	198	198	198
Non-Farm	--	--	--	--	--
Segment 06012	252	252	252	252	252
Urban	--	--	--	--	--
Rural	252	252	252	252	252
Farm	252	252	252	252	252
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Lewis County	4260	4260	4260	4260	4260
Out of Basin	163	163	163	163	163
In ORB	4097	4097	4097	4097	4097
Urban	--	--	--	--	--
Rural	4097	4097	4097	4097	4097
Farm	3411	3411	3411	3411	3411
Non-Farm	686	686	686	686	686
Segment 08091	480	480	480	480	480
Urban	--	--	--	--	--
Rural	480	480	480	480	480
Farm	480	480	480	480	480
Non-Farm	--	--	--	--	--
Segment 08092	74	74	74	74	74
Urban	--	--	--	--	--
Rural	74	74	74	74	74
Farm	74	74	74	74	74
Non-Farm	--	--	--	--	--
Segment 08093	163	163	163	163	163
Urban	--	--	--	--	--
Rural	163	163	163	163	163
Farm	163	163	163	163	163
Non-Farm	--	--	--	--	--
Segment 08094	450	450	450	450	450
Urban	--	--	--	--	--
Rural	450	450	450	450	450
Farm	450	450	450	450	450
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08095	1889	1889	1889	1889	1889
Urban	--	--	--	--	--
Rural	1889	1889	1889	1889	1889
Farm	1889	1889	1889	1889	1889
Non-Farm	--	--	--	--	--
Segment 08096	59	59	59	59	59
Urban	--	--	--	--	--
Rural	59	59	59	59	59
Farm	59	59	59	59	59
Non-Farm	--	--	--	--	--
Segment 08097	15	15	15	15	15
Urban	--	--	--	--	--
Rural	15	15	15	15	15
Farm	15	15	15	15	15
Non-Farm	--	--	--	--	--
Segment 08098	22	22	22	22	22
Urban	--	--	--	--	--
Rural	22	22	22	22	22
Farm	22	22	22	22	22
Non-Farm	--	--	--	--	--
Segment 08205	945	945	945	945	945
Urban	--	--	--	--	--
Rural	945	945	945	945	945
Farm	259	259	259	259	259
Non-Farm	686	686	686	686	686

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Livingston County	2528	2979	3068	3160	3634
Out of Basin	1441	1698	1749	1801	2071
In ORB	1087	1281	1319	1359	1563
Urban	--	--	--	--	--
Rural	1087	1281	1319	1359	1563
Farm	1087	1281	1319	1359	1563
Non-Farm	--	--	--	--	--
Segment 08009	307	359	369	380	438
Urban	--	--	--	--	--
Rural	307	359	369	380	438
Farm	307	359	369	380	438
Non-Farm	--	--	--	--	--
Segment 08010	74	88	91	94	108
Urban	--	--	--	--	--
Rural	74	88	91	94	108
Farm	74	88	91	94	108
Non-Farm	--	--	--	--	--
Segment 08011	268	316	325	335	385
Urban	--	--	--	--	--
Rural	268	316	325	335	385
Farm	268	316	325	335	385
Non-Farm	--	--	--	--	--
Segment 08224	283	334	344	354	407
Urban	--	--	--	--	--
Rural	283	334	344	354	407
Farm	283	334	344	354	407
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08225	155	184	190	196	225
Urban	--	--	--	--	--
Rural	155	184	190	196	225
Farm	155	184	190	196	225
Non-Farm	--	--	--	--	--
Mason County	5956	5956	5956	5956	5956
Out of Basin	2036	2036	2036	2036	2036
In ORB	3920	3920	3920	3920	3920
Urban	2556	2556	2556	2556	2556
Rural	1364	1364	1364	1364	1364
Farm	1117	1117	1117	1117	1117
Non-Farm	247	247	247	247	247
Segment 08087	123	123	123	123	123
Urban	--	--	--	--	--
Rural	123	123	123	123	123
Farm	123	123	123	123	123
Non-Farm	--	--	--	--	--
Segment 08088	246	246	246	246	246
Urban	--	--	--	--	--
Rural	246	246	246	246	246
Farm	246	246	246	246	246
Non-Farm	--	--	--	--	--
Segment 08089	465	465	465	465	465
Urban	--	--	--	--	--
Rural	465	465	465	465	465
Farm	218	218	218	218	218
Non-Farm	247	247	247	247	247

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08090	728	728	728	728	728
Urban	639	639	639	639	639
Rural	89	89	89	89	89
Farm	89	89	89	89	89
Non-Farm	--	--	--	--	--
Segment 08091	81	81	81	81	81
Urban	--	--	--	--	--
Rural	81	81	81	81	81
Farm	81	81	81	81	81
Non-Farm	--	--	--	--	--
Segment 08205	2087	2087	2087	2087	2087
Urban	1916	1916	1916	1916	1916
Rural	171	171	171	171	171
Farm	171	171	171	171	171
Non-Farm	--	--	--	--	--
Segment 08206	190	190	190	190	190
Urban	--	--	--	--	-
Rural	190	190	190	190	190
Farm	190	190	190	190	190
Non-Farm	--	--	--	--	--
McCracken County	20459	21116	21359	21874	22812
Out of Basin	12512	12762	12890	13405	14343
In ORB	7947	8354	8469	8469	8469
Urban	2865	2865	2980	2980	2980
Rural	5082	5489	5489	5489	5489
Farm	5082	5489	5489	5489	5489
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08003	177	189	189	189	189
Urban	--	--	--	--	--
Rural	177	189	189	189	189
Farm	177	189	189	189	189
Non-Farm	--	--	--	--	--
Segment 08004	602	643	643	643	643
Urban	--	--	--	--	--
Rural	602	643	643	643	643
Farm	602	643	643	643	643
Non-Farm	--	--	--	--	--
Segment 08005	602	643	643	643	643
Urban	--	--	--	--	--
Rural	602	643	643	643	643
Farm	602	643	643	643	643
Non-Farm	--	--	--	--	--
Segment 08006	319	341	341	341	341
Urban	--	--	--	--	--
Rural	319	341	341	341	341
Farm	319	341	341	341	341
Non-Farm	--	--	--	--	--
Segment 08906	35	38	38	38	38
Urban	--	--	--	--	--
Rural	35	38	38	38	38
Farm	35	38	38	38	38
Non-Farm	--	--	--	--	--
Segment 08007	2404	2613	2613	2613	2613
Urban	--	--	--	--	--
Rural	2404	2613	2613	2613	2613
Farm	2404	2613	2613	2613	2613
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08008	801	871	871	871	871
Urban	--	--	--	--	--
Rural	801	871	871	871	871
Farm	801	871	871	871	871
Non-Farm	--	--	--	--	--
Segment 08226	3007	3016	3131	3131	3131
Urban	2865	2865	2980	2980	2980
Rural	142	151	151	151	151
Farm	142	151	151	151	151
Non-Farm	--	--	--	--	--
Meade County	5783	5783	5783	5925	6129
Out of Basin	--	--	--	--	--
In ORB	5783	5783	5783	5925	6129
Urban	--	--	846	988	1192
Rural	5783	5783	4937	4937	4937
Farm	4368	4368	4368	4368	4368
Non-Farm	1415	1415	569	569	569
Segment 08037	44	44	44	44	44
Urban	--	--	--	--	--
Rural	44	44	44	44	44
Farm	44	44	44	44	44
Non-Farm	--	--	--	--	--
Segment 08038	103	103	103	103	103
Urban	--	--	--	--	--
Rural	103	103	103	103	103
Farm	103	103	103	103	103
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08039	118	118	118	118	118
Urban	--	--	--	--	--
Rural	118	118	118	118	118
Farm	118	118	118	118	118
Non-Farm	--	--	--	--	--
Segment 08040	88	88	88	88	88
Urban	--	--	--	--	--
Rural	88	88	88	88	88
Farm	80	80	80	80	80
Non-Farm	--	--	--	--	--
Segment 08041	486	486	486	486	486
Urban	--	--	--	--	--
Rural	486	486	486	486	486
Farm	486	486	486	486	486
Non-Farm	--	--	--	--	--
Segment 08042	879	879	879	879	879
Urban	--	--	--	--	--
Rural	879	879	879	879	879
Farm	879	879	879	879	879
Non-Farm	--	--	--	--	--
Segment 08043	1249	1249	1249	1391	1595
Urban	--	--	593	732	925
Rural	1249	1249	656	659	670
Farm	1249	883	597	597	597
Non-Farm	--	366	59	62	73
Segment 08044	942	942	942	942	942
Urban	--	--	--	--	--
Rural	942	942	942	942	942
Farm	942	942	942	942	942
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08216	840	840	840	840	840
Urban	--	--	--	--	--
Rural	840	840	840	840	840
Farm	294	294	294	294	294
Non-Farm	546	546	546	546	546
Segment 08217	1034	1034	1034	1034	1034
Urban	--	--	--	--	--
Rural	1034	1034	1034	1034	1034
Farm	530	530	530	530	530
Non-Farm	504	504	504	504	504
Oldham County	3753	4245	4758	5387	8076
Out of Basin	695	764	866	979	1469
In ORB	3058	3481	3892	4408	6607
Urban	--	--	--	--	773
Rural	3058	3481	3892	4408	5834
Farm	2563	2986	3356	3813	5834
Non-Farm	495	495	536	595	--
Segment 08050	464	541	611	697	1068
Urban	--	--	--	--	--
Rural	464	541	611	697	1068
Farm	464	541	611	697	1068
Non-Farm	--	--	--	--	--
Segment 08051	672	783	877	1000	1530
Urban	--	--	--	--	--
Rural	672	783	877	1000	1530
Farm	672	783	877	1000	1530
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08052	1061	1155	1281	1431	2052
Urban	--	--	--	--	773
Rural	1061	1155	1281	1431	1279
Farm	566	660	745	836	1279
Non-Farm	495	495	536	595	--
Segment 08053	336	391	438	499	763
Urban	--	--	--	--	--
Rural	336	391	438	499	763
Farm	336	391	438	499	763
Non-Farm	--	--	--	--	--
Segment 08054	147	171	192	219	335
Urban	--	--	--	--	--
Rural	147	171	192	219	335
Farm	147	171	192	219	335
Non-Farm	--	--	--	--	--
Segment 08212	336	391	438	499	763
Urban	--	--	--	--	--
Rural	336	391	438	499	763
Farm	336	391	438	499	763
Non-Farm	--	--	--	--	--
Segment 08213	42	49	55	63	96
Urban	--	--	--	--	--
Rural	42	49	55	63	96
Farm	42	49	55	63	96
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Pendleton County	2997	2997	3087	3180	3562
Out of Basin	2849	2849	2934	3022	3385
In ORB	148	148	153	158	177
Urban	--	--	--	--	--
Rural	148	148	153	158	177
Farm	148	148	153	158	177
Non-Farm	--	--	--	--	--
Segment 08080	22	22	23	24	27
Urban	--	--	--	--	--
Rural	22	22	23	24	27
Farm	22	22	23	24	27
Non-Farm	--	--	--	--	--
Segment 08082	60	60	62	64	71
Urban	--	--	--	--	--
Rural	60	60	62	64	71
Farm	60	60	62	64	71
Non-Farm	--	--	--	--	--
Segment 08083	36	36	37	38	43
Urban	--	--	--	--	--
Rural	36	36	37	38	43
Farm	36	36	37	38	43
Non-Farm	--	--	--	--	--
Segment 08207	30	30	31	32	36
Urban	--	--	--	--	--
Rural	30	30	31	32	36
Farm	30	30	31	32	36
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Rowan County	3375	4488	4488	4847	5235
Out of Basin	3323	4419	4419	4772	5154
In ORB	52	69	69	75	81
Urban	--	--	--	--	--
Rural	52	69	69	75	81
Farm	52	69	69	75	81
Non-Farm	--	--	--	--	--
Segment 06013	52	69	69	75	81
Urban	--	--	--	--	--
Rural	52	69	69	75	81
Farm	52	69	69	75	81
Non-Farm	--	--	--	--	--
Trimble County	1748	1832	1892	1950	2135
Out of Basin	744	781	805	837	929
In ORB	1004	1051	1087	1113	1206
Urban	--	--	--	--	--
Rural	1004	1051	1087	1113	1206
Farm	525	525	525	525	525
Non-Farm	479	526	562	588	681
Segment 08054	44	44	44	44	44
Urban	--	--	--	--	--
Rural	44	44	44	44	44
Farm	44	44	44	44	44
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08055	44	44	44	44	44
Urban	--	--	--	--	--
Rural	44	44	44	44	44
Farm	44	44	44	44	44
Non-Farm	--	--	--	--	--
Segment 08056	288	311	331	343	390
Urban	--	--	--	--	--
Rural	288	311	331	343	390
Farm	44	44	44	44	44
Non-Farm	244	267	287	299	346
Segment 08057	179	179	179	179	179
Urban	--	--	--	--	--
Rural	179	179	179	179	179
Farm	179	179	179	179	179
Non-Farm	--	--	--	--	--
Segment 08058	33	33	33	33	33
Urban	--	--	--	--	--
Rural	33	33	33	33	33
Farm	33	33	33	33	33
Non-Farm	--	--	--	--	--
Segment 08059	16	16	16	16	16
Urban	--	--	--	--	--
Rural	16	16	16	16	16
Farm	16	16	16	16	16
Non-Farm	--	--	--	--	--
Segment 08060	44	44	44	44	44
Urban	--	--	--	--	--
Rural	44	44	44	44	44
Farm	44	44	44	44	44
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08212	356	380	396	410	456
Urban	--	--	--	--	--
Rural	356	380	396	410	456
Farm	121	121	121	121	121
Non-Farm	235	259	275	289	335
Union County	4423	4887	5153	5405	5944
Out of Basin	--	--	--	--	--
In ORB	4423	4887	5153	5405	5944
Urban	1096	1096	1362	1614	2153
Rural	3327	3791	3791	3791	3791
Farm	2157	2621	2621	2621	2621
Non-Farm	1170	1170	1170	1170	1170
Segment 08015	187	223	223	223	223
Urban	--	--	--	--	--
Rural	187	223	223	223	223
Farm	187	223	223	223	223
Non-Farm	--	--	--	--	--
Segment 08915	6	8	8	8	8
Urban	--	--	--	--	--
Rural	6	8	8	8	8
Farm	6	8	8	8	8
Non-Farm	--	--	--	--	--
Segment 08016	466	568	568	568	568
Urban	--	--	--	--	--
Rural	466	568	568	568	568
Farm	466	568	568	568	568
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08017	66	80	80	80	80
Urban	--	--	--	--	--
Rural	66	80	80	80	80
Farm	66	80	80	80	80
Non-Farm	--	--	--	--	--
Segment 08018	1273	1300	1566	1818	2357
Urban	1096	1096	1362	1614	2153
Rural	177	204	204	204	204
Farm	125	152	152	152	152
Non-Farm	52	52	52	52	52
Segment 08019	6	8	8	8	8
Urban	--	--	--	--	--
Rural	6	8	8	8	8
Farm	6	8	8	8	8
Non-Farm	--	--	--	--	--
Segment 08020	14	16	16	16	16
Urban	--	--	--	--	--
Rural	14	16	16	16	16
Farm	14	16	16	16	16
Non-Farm	--	--	--	--	--
Segment 08021	657	788	788	788	788
Urban	--	--	--	--	--
Rural	657	788	788	788	788
Farm	605	736	736	736	736
Non-Farm	52	52	52	52	52
Segment 08222	425	434	434	434	434
Urban	--	--	--	--	--
Rural	425	434	434	434	434
Farm	39	48	48	48	48
Non-Farm	386	386	386	386	386

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08223	99	120	120	120	120
Urban	--	--	--	--	--
Rural	99	120	120	120	120
Farm	99	120	120	120	120
Non-Farm	--	--	--	--	--
Segment 10001	52	63	63	63	63
Urban	--	--	--	-	--
Rural	52	63	63	63	63
Farm	52	63	63	63	63
Non-Farm	--	--	--	--	--
Segment 10002	982	1048	1048	1048	1048
Urban	--	--	--	--	--
Rural	982	1048	1048	1048	1048
Farm	302	368	368	368	368
Non-Farm	680	680	680	680	680
Segment 10003	66	80	80	80	80
Urban	--	--	--	--	--
Rural	66	80	80	80	80
Farm	66	80	80	80	80
Non-Farm	--	--	--	--	--
Segment 10004	124	151	151	151	151
Urban	--	--	--	--	--
Rural	124	151	151	151	151
Farm	124	151	151	151	151
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Webster County	5188	5188	5242	5352	6167
Out of Basin	1096	1096	1107	1118	1247
In ORB	4092	4092	4135	4234	4920
Urban	1668	1668	2819	2918	3604
Rural	2424	2424	1316	1316	1316
Farm	1644	1644	1316	1316	1316
Non-Farm	780	780	--	--	--
Segment 08021	292	292	234	234	234
Urban	--	--	--	--	--
Rural	292	292	234	234	234
Farm	292	292	234	234	234
Non-Farm	--	--	--	--	--
Segment 10004	1789	1789	1888	1915	2043
Urban	--	--	1081	1108	1236
Rural	1789	1789	807	807	807
Farm	1009	1009	807	807	807
Non-Farm	780	780	--	--	--
Segment 10005	241	241	193	193	193
Urban	--	--	--	--	--
Rural	241	241	193	193	193
Farm	241	241	193	193	193
Non-Farm	--	--	--	--	--
Segment 10006	855	855	886	922	1201
Urban	834	834	869	905	1184
Rural	21	21	17	17	17
Farm	21	21	17	17	17
Non-Farm	--	--	--	--	--

EXHIBIT A-3t (Continued) HOUSING DISAGGREGATIION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10007	17	17	14	14	14
Urban	--	--	--	--	--
Rural	17	17	14	14	14
Farm	17	17	14	14	14
Non-Farm	--	--	--	--	--
Segment 10008	898	898	920	956	1235
Urban	834	834	869	905	1184
Rural	64	64	51	51	51
Farm	64	64	51	51	51
Non-Farm	--	--	--	--	--

EXHIBIT A-4t EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Thirty-four county total	362434	502914	600996	685690	763569
Out of Basin	166987	230931	269973	312275	373001
In ORB	195447	271983	331023	373415	390568
Ballard County	758	1279	1279	1279	1279
Out of Basin	431	728	728	728	728
In ORB	327	551	551	551	551
Boone County	2396	8680	15000	21700	32800
Out of Basin	213	770	1331	1902	2545
In ORB	2183	7910	13669	19798	30255
Boyd County	14712	20115	25030	29095	33630
Out of Basin	4753	6499	8087	8848	9870
In ORB	9959	13616	16943	20247	23760
Bracken County	931	909	929	949	1062
Out of Basin	294	287	293	284	291
In ORB	637	622	636	665	771
Breckinridge County	1410	1996	2088	2181	2659
Out of Basin	415	587	614	641	798
In ORB	995	1409	1474	1540	1861
Caldwell County	2176	3948	4190	4433	5580
Out of Basin	1452	2635	2796	2995	3905
In ORB	724	1313	1394	1438	1675
Campbell County	13396	14763	18000	20000	22900
Out of Basin	4665	5141	6268	6968	7969
In ORB	8731	9622	11732	13032	14931
Carroll County	1420	3263	3404	3546	4154
Out of Basin	1145	2631	2745	2848	3496
In ORB	275	632	659	698	658

EXHIBIT A-4t (Continued) EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Carter County	2599	2863	2863	2863	2863
Out of Basin	--	--	--	--	--
In ORB	2599	2863	2863	2863	2863
Christian County	9180	12074	13059	14045	18072
Out of Basin	8671	11405	12335	13336	17423
In ORB	509	669	724	709	649
Crittenden County	1075	1618	1675	1734	2019
Out of Basin	157	237	245	250	277
In ORB	918	1381	1430	1484	1742
Daviess County	20746	25598	29200	35038	43700
Out of Basin	12469	15386	17551	20994	26055
In ORB	8277	10212	11649	14044	17645
Elliott County	311	515	515	515	515
Out of Basin	13	21	21	21	21
In ORB	298	494	494	494	494
Gallatin County	283	421	462	502	690
Out of Basin	56	83	91	119	116
In ORB	227	338	371	383	574
Greenup County	3169	4297	5500	6200	7900
Out of Basin	--	--	--	--	--
In ORB	3169	4297	5500	6200	7900
Hancock County	263	3076	3435	3793	5467
Out of Basin	58	677	756	835	377
In ORB	205	2399	2679	2958	5090
Hardin County	6892	12197	13061	13926	16416
Out of Basin	6090	10778	11541	12305	14505
In ORB	802	1419	1520	1621	1911

EXHIBIT A-4t (Continued) EMPLOYMENT DISAGGREGATION
FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment 1960	1970	1975	1980	1995
Henderson County	7366	9523	13200	16800	19500
Out of Basin	1160	1500	2079	4874	3224
In ORB	6206	8023	11121	11926	16276
Henry County	1132	1720	1811	1902	2340
Out of Basin	1111	1689	1778	1867	2297
In ORB	21	31	33	35	43
Hopkins County	8841	12177	12444	12712	13973
Out of Basin	6094	8393	8577	8356	10879
In ORB	2747	3748	3867	4356	3094
Jefferson County	208327	286737	354391	409983	437003
Out of Basin	84998	116989	144592	174243	214568
In ORB	123329	169748	209799	235740	222435
Kenton County	20093	26922	30000	31800	34200
Out of Basin	15735	21084	23494	24888	26726
In ORB	4358	5838	6506	6912	7474
Lawrence County	994	1592	1592	1592	1592
Out of Basin	917	1468	1468	1468	1468
In ORB	77	124	124	124	124
Lewis County	1069	1609	1609	1609	1609
Out of Basin	41	61	61	61	61
In ORB	1028	1548	1548	1548	1548
Livingston County	1112	1046	1081	1115	1280
Out of Basin	634	596	616	636	729
In ORB	478	450	465	479	551
Mason County	4697	5683	5683	5683	5683
Out of Basin	1606	1943	1943	1943	1943
In ORB	3091	3740	3740	3740	3740

EXHIBIT A-4t (Continued) EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
McCracken County	16544	21045	21297	21550	22451
Out of Basin	9999	12720	12872	13308	14235
In ORB	6545	8325	8425	8242	8216
Meade County	1704	2434	2481	2527	2606
Out of Basin	--	--	--	--	--
In ORB	1704	2434	2481	2527	2606
Oldham County	1366	2377	2694	3011	4506
Out of Basin	246	428	485	542	811
In ORB	1120	1949	2209	2469	3695
Pendleton County	942	1551	1596	1641	1844
Out of Basin	895	1474	1517	1560	1753
In ORB	47	77	79	81	91
Rowan County	2267	4137	4499	4860	5266
Out of Basin	2232	4074	4430	4785	5185
In ORB	35	63	69	75	81
Trimble County	310	415	426	437	477
Out of Basin	132	177	182	188	209
In ORB	178	238	244	249	268
Union County	2507	4108	4242	4376	4975
Out of Basin	--	--	--	--	--
In ORB	2507	4108	4242	4376	4975
Webster County	1446	2226	2260	2293	2558
Out of Basin	305	470	477	482	537
In ORB	1141	1756	1783	1811	2021

EXHIBIT A-5t ADD EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Nine ADD total	412462	578755	703350	806764	988150
Out of Basin	217015	306772	372327	433349	597582
In ORB	195447	271983	331023	373415	390568
Purchase ADD	35151	49073	58500	66739	80900
Out of Basin	28279	40197	49524	57946	72133
In ORB	6872	8876	8976	8793	8767
Ballard County	758	1279	1279	1279	1279
Out of Basin	431	728	728	728	728
In ORB	327	551	551	551	551
McCracken County	16544	21045	21297	21550	22451
Out of Basin	9999	12720	12872	13308	14235
In ORB	6545	8325	8425	8242	8216
Pennyrile ADD	29698	41965	53600	61533	76000
Out of Basin	24322	34368	45720	53067	68289
In ORB	5376	7597	7880	8466	7711
Livingston County	1112	1046	1081	1115	1280
Out of Basin	634	596	616	636	729
In ORB	478	450	465	479	551
Crittenden County	1075	1618	1675	1734	2019
Out of Basin	157	237	245	250	277
In ORB	918	1381	1430	1484	1742
Caldwell County	2176	3948	4190	4433	5580
Out of Basin	1452	2635	2796	2995	3905
In ORB	724	1313	1394	1438	1675
Hopkins County	8841	12177	12444	12712	13973
Out of Basin	6094	8393	8577	8356	10879
In ORB	2747	3784	3867	4356	3094

EXHIBIT A-5t (Continued) ADD EMPLOYMENT DISAGGREGATION
FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Christian County	9180	12074	13059	14045	18072
Out of Basin	8671	11405	12335	13336	17423
In ORB	509	669	724	709	649
Green River ADD	35375	48938	61900	69454	85600
Out of Basin	17039	22440	30426	34339	39593
In ORB	18336	26498	31474	35115	46007
Union County	2507	4108	4242	4376	4975
Out of Basin	--	--	--	--	--
In ORB	2507	4108	4242	4376	4975
Webster County	1446	2226	2260	2293	2558
Out of Basin	305	470	477	482	537
In ORB	1141	1756	1783	1811	2021
Henderson County	7366	9523	13200	16800	19500
Out of Basin	1160	1500	2079	4874	3224
In ORB	6206	8023	11121	11926	16276
Daviess County	20746	25598	29200	35038	43700
Out of Basin	12469	15386	17551	20994	26055
In ORB	8277	10212	11649	14044	17645
Hancock County	263	3076	3435	3793	5467
Out of Basin	58	677	756	835	377
In ORB	205	2399	2679	2958	5090
Lincoln Trail ADD	19447	29886	38000	44031	61200
Out of Basin	15946	24624	32525	38343	54822
In ORB	3501	5262	5475	5688	6378
Breckinridge County	1410	1996	2088	2181	2659
Out of Basin	415	587	614	641	798
In ORB	995	1409	1474	1540	1861

EXHIBIT A-5t (Continued) ADD EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Meade County	1704	2434	2481	2527	2606
Out of Basin	--	--	--	--	--
In ORB	1704	2434	2481	2527	2606
Hardin County	6892	12197	13061	13926	16416
Out of Basin	6090	10778	11541	12305	14505
In ORB	802	1419	1520	1621	1911
Jefferson ADD	216417	298800	355000	409983	496000
Out of Basin	91769	126834	142715	171490	269559
In ORB	124648	171966	212285	238493	226441
Jefferson County	208327	286737	354391	409983	437003
Out of Basin	84998	116989	144592	174243	214568
In ORB	123329	169748	209799	235740	222435
Oldham County	1366	2377	2694	3011	4506
Out of Basin	246	428	485	542	811
In ORB	1120	1949	2209	2469	3695
Trimble County	310	415	426	437	477
Out of Basin	132	177	182	188	209
In ORB	178	238	244	249	268
Henry County	1132	1720	1811	1902	2340
Out of Basin	1111	1689	1778	1867	2297
In ORB	21	31	33	35	43
Northern Kentucky ADD	40527	58133	71400	80604	98100
Out of Basin	24706	33716	38384	39700	44117
In ORB	15821	24417	33016	40904	53983
Carroll County	1420	3263	3404	3546	4154
Out of Basin	1145	2631	2745	2848	3496
In ORB	275	632	659	698	658

EXHIBIT A-5t (Continued) ADD EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Gallatin County	283	421	462	502	690
Out of Basin	56	83	91	119	116
In ORB	227	338	371	383	574
Boone County	2396	8680	15000	21700	32800
Out of Basin	213	770	1331	1902	2545
In ORB	2183	7910	13669	19798	30255
Kenton County	20093	26922	30000	31800	34200
Out of Basin	15735	21084	23494	24888	26726
In ORB	4358	5838	6506	6912	7474
Campbell County	13396	14763	18000	20000	22900
Out of Basin	4665	5141	6268	6968	7969
In ORB	8731	9622	11732	13032	14931
Pendleton County	942	1551	1596	1641	1844
Out of Basin	895	1474	1517	1560	1753
In ORB	47	77	79	81	91
Buffalo Trace ADD	7879	10695	12750	14562	17000
Out of Basin	3123	4785	6826	8609	10941
In ORB	4756	5910	5924	5953	6059
Bracken County	931	909	929	949	1062
Out of Basin	294	287	293	284	291
In ORB	637	622	636	665	771
Mason County	4697	5683	5683	5683	5683
Out of Basin	1606	1943	1943	1943	1943
In ORB	3091	3740	3740	3740	3740
Lewis County	1069	1609	1609	1609	1609
Out of Basin	41	61	61	61	61
In ORB	1028	1548	1548	1548	1548

EXHIBIT A-5t (Continued) ADD EMPLOYMENT DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	At Year Actual or Projected Employment				
	1960	1970	1975	1980	1995
Fivco ADD	21786	29382	35800	40266	48500
Out of Basin	5684	7988	9876	10338	13359
In ORB	16102	21394	25924	29928	35141
Greenup County	3169	4297	5500	6200	7900
Out of Basin	--	--	--	--	--
In ORB	3169	4297	5500	6200	7900
Boyd County	14712	20115	25030	29095	33630
Out of Basin	4753	6499	8087	8848	9870
In ORB	9959	13616	16943	20247	23760
Lawrence County	994	1592	1592	1592	1592
Out of Basin	917	1468	1468	1468	1468
In ORB	77	124	124	124	124
Carter County	2599	2863	2863	2863	2863
Out of Basin	--	--	--	--	--
In ORB	2599	2863	2863	2863	2863
Elliott County	311	515	515	515	515
Out of Basin	13	21	21	21	21
In ORB	298	494	494	494	494
Gateway ADD	6182	11883	16400	19592	24850
Out of Basin	6147	11820	16331	19517	24769
In ORB	35	63	69	75	81
Rowan County	2267	4137	4499	4860	5266
Out of Basin	2232	4074	4430	4785	5185
In ORB	35	63	69	75	81

EXHIBIT A-6t LAND USE DISAGGREGATION (1) FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Thirty-Four county total	10929	10929	10929	10929	10929
Outside ORB	5109	5109	5109	5109	5109
Inside ORB	5820	5820	5820	5820	5820
Rural	5355	5355	5355	5309	5156
Agriculture	2929	2929	2929	2888	2776
Silviculture	2233	2233	2233	2206	2117
Mining	94	94	94	116	164
Urban	465	465	465	511	664
Construction	35	35	35	46	153
Ballard County	259	259	259	259	259
Outside ORB	134	134	134	134	134
Inside ORB	125	125	125	125	125
Rural	123	123	123	123	123
Agriculture	86	86	86	86	86
Silviculture	37	37	37	37	37
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08001	60	60	60	60	60
Rural	59	59	59	59	59
Agriculture	42	42	42	42	42
Silviculture	17	17	17	17	17
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--

(1) Land Use given in square miles.

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08002	46	46	46	46	46
Rural	45	45	45	45	45
Agriculture	32	32	32	32	32
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08003	9	9	9	9	9
Rural	9	9	9	9	9
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08004	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08226	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08227	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Boone County	249	249	249	249	249
Outside ORB	27	27	27	27	27
Inside ORB	222	222	222	222	222
Rural	176	176	176	173	162
Agriculture	125	125	125	122	116
Silviculture	51	51	51	51	46
Mining	--	--	--	--	--
Urban	46	46	46	49	60
Construction	--	--	--	3	11
Segment 08068	63	63	63	63	63
Rural	60	60	60	59	57
Agriculture	43	43	43	42	41
Silviculture	17	17	17	17	16
Mining	--	--	--	--	--
Urban	3	3	3	4	6
Construction	--	--	--	1	2
Segment 08069	4	4	4	4	4
Rural	4	4	4	4	4
Agriculture	3	3	3	3	3
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08070	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	6	6	6	6	6
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08071	45	45	45	45	45
Rural	25	25	25	24	21
Agriculture	18	18	18	17	15
Silviculture	7	7	7	7	6
Mining	--	--	--	--	--
Urban	20	20	20	21	24
Construction	--	--	--	1	3
Segment 08072	14	14	14	14	14
Rural	13	13	13	13	13
Agriculture	9	9	9	9	9
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08073	33	33	33	33	33
Rural	26	26	26	25	21
Agriculture	19	19	19	18	15
Silviculture	7	7	7	7	6
Mining	--	--	--	--	--
Urban	7	7	7	8	12
Construction	--	--	--	1	4

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08074	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08075	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08076	9	9	9	9	9
Rural	5	5	5	5	4
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	4	4	4	4	5
Construction	--	--	--	--	1
Segment 08077	7	7	7	7	7
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	7	7	7	7	7
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08209	11	11	11	11	11
Rural	9	9	9	9	8
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	2	2	2	2	3
Construction	--	--	--	--	1
Segment 08210	20	20	20	20	20
Rural	18	18	18	18	18
Agriculture	13	13	13	13	13
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Boyd County	159	159	159	159	159
Outside ORB	38	38	38	38	38
Inside ORB	121	121	121	121	121
Rural	103	103	103	98	84
Agriculture	41	41	41	39	32
Silviculture	56	56	56	52	42
Mining	6	6	6	7	10
Urban	18	18	18	23	37
Construction	--	--	--	5	14
Segment 08106	11	11	11	11	11
Rural	8	8	8	6	--
Agriculture	3	3	3	2	--
Silviculture	5	5	5	4	--
Mining	--	--	--	--	--
Urban	3	3	3	5	11
Construction	--	--	--	2	6

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08107	7	7	7	7	7
Rural	3	3	3	2	--
Agriculture	1	1	1	1	--
Silviculture	2	2	2	1	--
Mining	--	--	--	--	--
Urban	4	4	4	5	7
Construction	--	--	--	1	2
Segment 08108	6	6	6	6	6
Rural	6	6	6	5	1
Agriculture	2	2	2	2	--
Silviculture	4	4	4	3	1
Mining	--	--	--	--	--
Urban	--	--	--	1	5
Construction	--	--	--	1	4
Segment 08200	4	4	4	4	4
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--
Segment 08201	5	5	5	5	5
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	5	5	5	5	5
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06004	88	88	88	88	88
Rural	86	86	86	85	83
Agriculture	35	35	35	34	32
Silviculture	45	45	45	44	41
Mining	6	6	6	7	--
Urban	2	2	2	3	5
Construction	--	--	--	1	2
Bracken County	204	204	204	204	204
Outside ORB	84	84	84	84	84
Inside ORB	120	120	120	120	120
Rural	115	115	115	115	115
Agriculture	72	72	72	72	72
Silviculture	43	43	43	43	43
Mining	--	--	--	--	--
Urban	5	5	5	5	5
Construction	--	--	--	--	--
Segment 08083	5	5	5	5	5
Rural	4	4	4	4	4
Agriculture	2	2	2	2	2
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08084	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08085	51	51	51	51	51
Rural	50	50	50	50	50
Agriculture	32	32	32	32	32
Silviculture	18	18	18	18	18
Mining	--	--	--	--	--
Urban	--	1	1	1	1
Construction	--	--	--	--	--
Segment 08086	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08087	26	26	26	26	26
Rural	25	25	25	25	25
Agriculture	16	16	16	16	16
Silviculture	9	9	9	9	9
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08206	15	15	15	15	15
Rural	13	13	13	13	13
Agriculture	8	8	8	8	8
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08207	7	7	7	7	7
Rural	7	7	7	7	7
Agriculture	4	4	4	4	4
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Breckenridge County	564	564	564	564	564
Outside ORB	220	220	220	220	220
Inside ORB	344	344	344	344	344
Rural	338	338	338	336	328
Agriculture	193	193	193	193	190
Silviculture	145	145	145	143	138
Mining	--	--	--	--	--
Urban	6	6	6	8	16
Construction	--	--	--	2	8
Segment 08032	86	86	86	86	86
Rural	85	95	85	85	85
Agriculture	43	43	43	43	43
Silviculture	42	42	42	42	42
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08033	5	5	5	5	5
Rural	5	5	5	5	3
Agriculture	3	3	3	3	2
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	--	--	--	--	2
Construction	--	--	--	--	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08034	6	6	6	6	6
Rural	6	6	6	5	3
Agriculture	3	3	3	3	2
Silviculture	3	3	3	2	1
Mining	--	--	--	--	--
Urban	--	--	--	1	3
Construction	--	--	--	1	2
Segment 08035	154	154	154	154	154
Rural	152	152	152	152	151
Agriculture	92	92	92	92	92
Silviculture	60	60	60	60	59
Mining	--	--	--	--	--
Urban	2	2	2	2	3
Construction	--	--	--	--	1
Segment 08036	7	7	7	7	7
Rural	7	7	7	7	7
Agriculture	4	4	4	4	4
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08037	19	19	19	19	19
Rural	19	19	19	19	19
Agriculture	10	10	10	10	10
Silviculture	9	9	9	9	9
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08039	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08042	43	43	43	43	43
Rural	42	42	42	42	41
Agriculture	27	27	27	27	27
Silviculture	15	15	15	15	14
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08217	22	22	22	22	22
Rural	20	20	20	19	17
Agriculture	10	10	10	10	9
Silviculture	10	10	10	9	8
Mining	--	--	--	--	--
Urban	2	2	2	3	5
Construction	--	--	--	1	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Caldwell County	357	357	357	357	357
Outside ORB	158	158	158	158	158
Inside ORB	199	199	199	199	199
Rural	197	197	197	197	197
Agriculture	100	100	100	100	100
Silviculture	97	97	97	97	97
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 10005	7	7	7	7	7
Rural	7	7	7	7	7
Agriculture	4	4	4	4	4
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10007	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10010	102	102	102	102	102
Rural	102	102	102	102	102
Agriculture	51	51	51	51	51
Silviculture	51	51	51	51	51
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10011	53	53	53	53	53
Rural	52	52	52	52	52
Agriculture	26	26	26	26	26
Silviculture	26	26	26	26	26
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 10012	22	22	22	22	22
Rural	21	21	21	21	21
Agriculture	11	11	11	11	11
Silviculture	10	10	10	10	10
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 10013	12	12	12	12	12
Rural	12	12	12	12	12
Agriculture	6	6	6	6	6
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Campbell County	149	149	149	149	149
Outside ORB	52	52	52	52	52
Inside ORB	97	97	97	97	97
Rural	82	82	82	81	78
Agriculture	60	60	60	59	57
Silviculture	22	22	22	22	21
Mining	--	--	--	--	--
Urban	15	15	15	16	19
Construction	--	--	--	1	3

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08078	21	21	21	21	21
Rural	21	21	21	20	17
Agriculture	16	16	16	15	13
Silviculture	5	5	5	5	4
Mining	--	--	--	--	--
Urban	--	--	--	1	4
Construction	--	--	--	1	3
Segment 08079	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08080	47	47	47	47	47
Rural	46	46	46	46	46
Agriculture	34	34	34	34	34
Silviculture	12	12	12	12	12
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08081	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08207	14	14	14	14	14
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	8	8	8	8	8
Construction	--	--	--	--	--
Segment 08208	6	6	6	6	6
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	6	6	6	6	6
Construction	--	--	--	--	--
Carroll County	130	130	130	130	130
Outside ORB	82	82	82	82	82
Inside ORB	48	48	48	48	48
Rural	44	44	44	44	44
Agriculture	30	30	30	30	30
Silviculture	14	14	14	14	14
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--
Segment 08060	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08061	11	11	11	11	11
Rural	9	9	9	9	9
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08062	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08211	15	15	15	15	15
Rural	13	13	13	13	13
Agriculture	9	9	9	9	9
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08212	13	13	13	13	13
Rural	13	13	13	13	13
Agriculture	9	9	9	9	9
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Carter County	402	402	402	402	402
Outside ORB	--	--	--	--	--
Inside ORB	402	402	402	402	402
Rural	390	390	390	386	373
Agriculture	127	127	127	126	121
Silviculture	257	257	257	253	242
Mining	6	6	6	7	10
Urban	12	12	12	16	29
Construction	--	--	--	4	13
Segment 06002	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	1	1	1	1	1
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06004	19	19	19	19	19
Rural	19	19	19	19	19
Agriculture	5	5	5	5	5
Silviculture	14	14	14	14	14
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06005	13	13	13	13	13
Rural	13	13	13	13	13
Agriculture	4	4	4	4	4
Silviculture	9	9	9	9	9
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06006	16	16	16	16	16
Rural	15	15	15	15	15
Agriculture	4	4	4	4	4
Silviculture	11	11	11	11	11
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 06007	28	28	28	28	28
Rural	25	25	25	23	19
Agriculture	7	7	7	7	6
Silviculture	18	18	18	16	13
Mining	--	--	--	--	--
Urban	3	3	3	5	9
Construction	--	--	--	2	4
Segment 06008	11	11	11	11	11
Rural	11	11	11	11	11
Agriculture	3	3	3	3	3
Silviculture	8	8	8	8	8
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06009	18	18	18	18	18
Rural	18	18	18	18	18
Agriculture	5	5	5	5	5
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06010	18	18	18	18	18
Rural	17	17	17	17	17
Agriculture	5	5	5	5	5
Silviculture	12	12	12	12	12
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 06011	11	11	11	11	11
Rural	11	11	11	11	10
Agriculture	3	3	3	3	3
Silviculture	8	8	8	8	7
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1
Segment 06012	61	61	61	61	61
Rural	59	59	59	59	57
Agriculture	17	17	17	17	15
Silviculture	36	36	36	35	32
Mining	6	6	6	7	10
Urban	2	2	2	2	4
Construction	--	--	--	--	2
Segment 06103	23	23	23	23	23
Rural	23	23	23	23	23
Agriculture	18	18	18	18	18
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 11004	7	7	7	7	7
Rural	7	7	7	7	7
Agriculture	2	2	2	2	2
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 11005	48	48	48	48	48
Rural	47	47	47	47	47
Agriculture	14	14	14	14	14
Silviculture	33	33	33	33	33
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 11006	126	126	126	126	126
Rural	122	122	122	120	114
Agriculture	39	39	39	38	36
Silviculture	83	83	83	82	78
Mining	--	--	--	--	--
Urban	4	4	4	6	12
Construction	--	--	--	2	6
Christian County	726	726	726	726	726
Outside ORB	626	626	626	626	626
Inside ORB	100	100	100	100	100
Rural	99	99	99	99	99
Agriculture	49	49	49	49	49
Silviculture	49	49	49	49	48
Mining	1	1	1	1	2
Urban	1	1	1	1	1
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10013	14	14	14	14	14
Rural	14	14	14	14	14
Agriculture	7	7	7	7	7
Silviculture	7	7	7	7	7
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10014	86	86	86	86	86
Rural	85	85	85	85	85
Agriculture	42	42	42	42	42
Silviculture	42	42	42	42	41
Mining	1	1	1	1	2
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Crittenden County	365	365	365	365	365
Outside ORB	75	75	75	75	75
Inside ORB	290	290	290	290	290
Rural	287	287	287	287	287
Agriculture	185	185	185	185	185
Silviculture	102	102	102	102	102
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Segment 08011	38	38	38	38	38
Rural	38	38	38	38	38
Agriculture	25	25	25	25	25
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08012	46	46	46	46	46
Rural	46	46	46	46	46
Agriculture	30	30	30	30	30
Silviculture	16	16	16	16	16
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08013	59	59	59	59	59
Rural	56	56	56	56	56
Agriculture	36	36	36	36	36
Silviculture	20	20	20	20	20
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Segment 08014	11	11	11	11	11
Rural	11	11	11	11	11
Agriculture	7	7	7	7	7
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08224	22	22	22	22	22
Rural	22	22	22	22	22
Agriculture	14	14	14	14	14
Silviculture	8	8	8	8	8
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10001	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10003	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10005	95	95	95	95	95
Rural	95	95	95	95	95
Agriculture	61	61	61	61	61
Silviculture	34	34	34	34	34
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10007	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Daviess County	462	462	462	462	462
Outside ORB	342	342	342	342	342
Inside ORB	120	120	120	120	120
Rural	119	119	119	115	104
Agriculture	93	93	93	90	81
Silviculture	26	26	26	25	23
Mining	--	--	--	--	--
Urban	1	1	1	5	16
Construction	--	--	--	4	11
Segment 08024	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	4	4	4	4	4
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08025	14	14	14	14	14
Rural	14	14	14	13	9
Agriculture	11	11	11	10	7
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	--	--	--	1	5
Construction	--	--	--	1	4
Segment 08026	37	37	37	37	37
Rural	37	37	37	37	36
Agriculture	29	29	29	29	28
Silviculture	8	8	8	8	8
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08027	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	4	4	4	4	4
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08028	35	35	35	35	35
Rural	35	35	35	33	31
Agriculture	27	27	27	26	24
Silviculture	8	8	8	7	7
Mining	--	--	--	--	--
Urban	--	--	--	2	4
Construction	--	--	--	2	2
Segment 08219	10	10	10	10	10
Rural	9	9	9	9	8
Agriculture	7	7	7	7	6
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08220	14	14	14	14	14
Rural	14	14	14	13	10
Agriculture	11	11	11	10	8
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	--	--	--	1	4
Construction	--	--	--	1	3

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Elliott County	240	240	240	240	240
Outside ORB	10	10	10	10	10
Inside ORB	230	230	230	230	230
Rural	228	228	228	226	222
Agriculture	68	68	68	67	66
Silviculture	160	160	160	159	156
Mining	--	--	--	--	--
Urban	2	2	2	4	8
Construction	--	--	--	2	4
Segment 06010	15	15	15	15	15
Rural	15	15	15	15	15
Agriculture	4	4	4	4	4
Silviculture	11	11	11	11	11
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06012	54	54	54	54	54
Rural	54	54	54	54	54
Agriculture	16	16	16	16	16
Silviculture	38	38	38	38	38
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06013	161	161	161	161	161
Rural	159	159	159	157	153
Agriculture	48	48	48	47	46
Silviculture	111	111	111	110	107
Mining	--	--	--	--	--
Urban	2	2	2	4	8
Construction	--	--	--	2	4

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Gallatin County	100	100	100	100	100
Outside ORB	22	22	22	22	22
Inside ORB	78	78	78	78	78
Rural	74	74	74	74	74
Agriculture	51	51	51	51	51
Silviculture	23	23	23	23	23
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--
Segment 08062	9	9	9	9	9
Rural	9	9	9	9	9
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08063	4	4	4	4	4
Rural	4	4	4	4	4
Agriculture	3	3	3	3	3
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08064	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08065	10	10	10	10	10
Rural	9	9	9	9	9
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08066	11	11	11	11	11
Rural	10	10	10	10	10
Agriculture	7	7	7	7	7
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08067	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08068	16	16	16	16	16
Rural	16	16	16	16	16
Agriculture	11	11	11	11	11
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08210	14	14	14	14	14
Rural	12	12	12	12	12
Agriculture	9	9	9	9	9
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08211	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Greenup County	351	351	351	351	351
Outside ORB	--	--	--	--	--
Inside ORB	351	351	351	351	351
Rural	320	320	320	317	305
Agriculture	99	99	99	98	94
Silviculture	221	221	221	219	211
Mining	--	--	--	--	--
Urban	31	31	31	34	46
Construction	--	--	--	3	12
Segment 08099	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08100	3	3	3	3	3
Rural	3	3	3	3	2
Agriculture	1	1	1	1	1
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1
Segment 08101	4	4	4	4	4
Rural	4	4	4	4	4
Agriculture	1	1	1	1	1
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08102	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	2	2	2	2	2
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08103	3	3	3	3	3
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08104	7	7	7	7	7
Rural	4	4	4	4	4
Agriculture	1	1	1	1	1
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Segment 08105	3	3	3	3	3
Rural	1	1	1	1	1
Agriculture	--	--	--	--	--
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08106	4	4	4	4	4
Rural	3	3	3	3	1
Agriculture	1	1	1	1	--
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	1	1	1	1	3
Construction	--	--	--	--	2
Segment 08201	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08202	3	3	3	3	3
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Segment 08203	10	10	10	10	10
Rural	6	6	6	6	6
Agriculture	2	2	2	2	2
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--
Segment 08204	8	8	8	8	8
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	8	8	8	8	8
Construction	--	--	--	--	--
Segment 08205	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06001	31	31	31	31	31
Rural	31	31	31	31	31
Agriculture	10	10	10	10	10
Silviculture	21	21	21	21	21
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06002	67	67	67	67	67
Rural	67	67	67	67	67
Agriculture	23	23	23	23	23
Silviculture	44	44	44	44	44
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06003	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06004	32	32	32	32	32
Rural	32	32	32	32	32
Agriculture	9	9	9	9	9
Silviculture	23	23	23	23	23
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 11001	80	80	80	80	80
Rural	77	77	77	74	65
Agriculture	23	23	23	22	19
Silviculture	54	54	54	52	46
Mining	--	--	--	--	--
Urban	3	3	3	6	15
Construction	--	--	--	3	9
Segment 11002	21	21	21	21	21
Rural	21	21	21	21	21
Agriculture	6	6	6	6	6
Silviculture	15	15	15	15	15
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 11003	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	3	3	3	3	3
Silviculture	7	7	7	7	7
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 11004	50	50	50	50	50
Rural	50	50	50	50	50
Agriculture	15	15	15	15	15
Silviculture	35	35	35	35	35
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 11006	1	1	1	1	1
Rural	1	1	1	1	1
Agriculture	--	--	--	--	--
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Hancock County	187	187	187	187	187
Outside ORB	41	41	41	41	41
Inside ORB	146	146	146	146	146
Rural	135	135	135	132	118
Agriculture	69	69	69	68	58
Silviculture	62	62	62	59	52
Mining	4	4	4	5	8
Urban	11	11	11	14	28
Construction	--	--	--	3	14
Segment 08028	79	79	79	79	79
Rural	79	79	79	79	79
Agriculture	40	40	40	40	39
Silviculture	36	36	36	35	34
Mining	3	3	3	4	6
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08928	2	2	2	2	2
Rural	2	2	2	2	--
Agriculture	1	1	1	1	--
Silviculture	1	1	1	1	--
Mining	--	--	--	--	--
Urban	--	--	--	--	2
Construction	--	--	--	--	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08029	18	18	18	18	18
Rural	15	15	15	14	10
Agriculture	7	7	7	7	4
Silviculture	7	7	7	6	4
Mining	1	1	1	1	2
Urban	3	3	3	4	8
Construction	--	--	--	1	4
Segment 08030	18	18	18	18	18
Rural	17	17	17	16	14
Agriculture	9	9	9	8	7
Silviculture	8	8	8	8	7
Mining	--	--	--	--	--
Urban	1	1	1	2	4
Construction	--	--	--	1	2
Segment 08031	11	11	11	11	11
Rural	10	10	10	10	8
Agriculture	5	5	5	5	4
Silviculture	5	5	5	5	4
Mining	--	--	--	--	--
Urban	1	1	1	1	3
Construction	--	--	--	--	2
Segment 08032	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08217	2	2	2	2	2
Rural	1	1	1	1	--
Agriculture	1	1	1	1	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08218	9	9	9	9	9
Rural	6	6	6	5	2
Agriculture	3	3	3	3	1
Silviculture	3	3	3	2	1
Mining	--	--	--	--	--
Urban	3	3	3	4	7
Construction	--	--	--	1	3
Segment 08219	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Hardin County	616	616	616	616	616
Outside ORB	537	537	537	537	537
Inside ORB	79	79	79	79	79
Rural	74	74	74	74	74
Agriculture	59	59	59	59	59
Silviculture	15	15	15	15	15
Mining	--	--	--	--	--
Urban	5	5	5	5	5
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08035	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08042	12	12	12	12	12
Rural	12	12	12	12	12
Agriculture	6	6	6	6	6
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08044	49	49	49	49	49
Rural	44	44	44	44	44
Agriculture	36	36	36	36	36
Silviculture	8	8	8	8	8
Mining	--	--	--	--	--
Urban	5	5	5	5	5
Construction	--	--	--	--	--
Segment 08216	16	16	16	16	16
Rural	16	16	16	16	16
Agriculture	16	16	16	16	16
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Henderson County	433	433	433	433	433
Outside ORB	149	149	149	149	149
Inside ORB	284	284	284	284	284
Rural	264	264	264	264	263
Agriculture	197	197	197	196	196
Silviculture	58	58	58	58	56
Mining	2	2	2	3	4
Urban	20	20	20	20	21
Construction	--	--	--	--	1
Segment 08019	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	4	4	4	4	4
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08020	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	4	4	4	4	4
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08021	109	109	109	109	109
Rural	107	107	107	107	107
Agriculture	83	83	83	82	82
Silviculture	22	22	22	22	21
Mining	2	2	2	3	4
Urban	2	2	2	2	2
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION
FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08022	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	4	4	4	4	4
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08023	114	114	114	114	114
Rural	102	102	102	102	102
Agriculture	79	79	79	79	79
Silviculture	23	23	23	23	23
Mining	--	--	--	--	--
Urban	12	12	12	12	12
Construction	--	--	--	--	--
Segment 08220	4	4	4	4	4
Rural	4	4	4	4	4
Agriculture	3	3	3	3	3
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08221	24	24	24	24	24
Rural	20	20	20	20	20
Agriculture	15	15	15	15	15
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08222	18	18	18	18	18
Rural	16	16	16	16	15
Agriculture	12	12	12	12	12
Silviculture	4	4	4	4	3
Mining	--	--	--	--	--
Urban	2	2	2	2	3
Construction	--	--	--	--	1
Henry County	289	289	289	289	289
Outside ORB	280	280	280	280	280
Inside ORB	9	9	9	9	9
Rural	9	9	9	8	5
Agriculture	7	7	7	6	4
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	--	--	--	1	4
Construction	--	--	--	1	3
Segment 08052	9	9	9	9	9
Rural	9	9	9	8	5
Agriculture	7	7	7	6	4
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	--	--	--	1	4
Construction	--	--	--	1	3

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Hopkins County	553	553	553	553	553
Outside ORB	273	273	273	273	273
Inside ORB	280	280	280	280	280
Rural	268	268	268	268	268
Agriculture	118	118	118	111	101
Silviculture	102	102	102	98	86
Mining	48	48	48	59	81
Urban	12	12	12	12	12
Construction	--	--	--	--	--
Segment 10008	141	141	141	141	141
Rural	139	139	139	139	139
Agriculture	64	64	64	61	56
Silviculture	53	53	53	51	46
Mining	22	22	22	27	37
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 10009	48	48	48	48	48
Rural	42	42	42	42	42
Agriculture	16	16	16	13	11
Silviculture	13	13	13	13	19
Mining	13	13	13	16	22
Urban	6	6	6	6	6
Construction	--	--	--	--	--
Segment 10010	21	21	21	21	21
Rural	21	21	21	21	21
Agriculture	11	11	11	11	11
Silviculture	10	10	10	10	10
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10012	20	20	20	20	20
Rural	17	17	17	17	17
Agriculture	9	9	9	9	9
Silviculture	8	8	8	8	8
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Segment 10014	50	50	50	50	50
Rural	49	49	49	49	49
Agriculture	18	18	18	17	14
Silviculture	18	18	18	16	13
Mining	13	13	13	16	22
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Jefferson County	375	375	375	375	375
Outside ORB	205	205	205	205	205
Inside ORB	170	170	170	170	170
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	170	170	170	170	170
Construction	--	--	--	--	--
Segment 08045	36	36	36	36	36
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	36	36	36	36	36
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08046	18	18	18	18	18
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	18	18	18	18	18
Construction	--	--	--	--	--
Segment 08047	55	55	55	55	55
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	55	55	55	55	55
Construction	--	--	--	--	--
Segment 08048	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08049	16	16	16	16	16
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	16	16	16	16	16
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08050	17	17	17	17	17
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	17	17	17	17	17
Construction	--	--	--	--	--
Segment 08213	12	12	12	12	12
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	12	12	12	12	12
Construction	--	--	--	--	--
Segment 08214	9	9	9	9	9
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	9	9	9	9	9
Construction	--	--	--	--	--
Segment 08215	5	5	5	5	5
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	5	5	5	5	5
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Kenton County	165	165	165	165	165
Outside ORB	144	144	144	144	144
Inside ORB	21	21	21	21	21
Rural	2	2	2	2	2
Agriculture	2	2	2	2	2
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	19	19	19	19	19
Construction	--	--	--	--	--
Segment 08068	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	2	2	2	2	2
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08077	7	7	7	7	7
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	7	7	7	7	7
Construction	--	--	--	--	--
Segment 08977	4	4	4	4	4
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	4	4	4	4	4
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08208	2	2	2	2	2
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08209	6	6	6	6	6
Rural	--	--	--	--	--
Agriculture	--	--	--	--	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	6	6	6	6	6
Construction	--	--	--	--	--
Lawrence County	425	425	425	425	425
Outside ORB	385	385	385	385	385
Inside ORB	40	40	40	40	40
Rural	40	40	40	40	40
Agriculture	12	12	12	12	12
Silviculture	28	28	28	28	28
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06004	18	18	18	18	18
Rural	18	18	18	18	18
Agriculture	5	5	5	5	5
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 06012	22	22	22	22	22
Rural	22	22	22	22	22
Agriculture	7	7	7	7	7
Silviculture	15	15	15	15	15
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Lewis County	486	486	486	486	486
Outside ORB	22	22	22	22	22
Inside ORB	464	464	464	464	464
Rural	455	455	455	453	450
Agriculture	202	202	202	201	200
Silviculture	253	253	253	252	250
Mining	--	--	--	--	--
Urban	9	9	9	11	14
Construction	--	--	--	2	3
Segment 08091	65	65	65	65	65
Rural	63	63	63	63	62
Agriculture	28	28	28	28	28
Silviculture	35	35	35	35	34
Mining	--	--	--	--	--
Urban	2	2	2	2	3
Construction	--	--	--	--	1
Segment 08092	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	4	4	4	4	4
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08093	22	22	22	22	22
Rural	22	22	22	22	22
Agriculture	10	10	10	10	10
Silviculture	12	12	12	12	12
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08094	61	61	61	61	61
Rural	59	59	59	59	59
Agriculture	26	26	26	26	26
Silviculture	33	33	33	33	33
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08095	256	256	256	256	256
Rural	255	255	255	255	255
Agriculture	114	114	114	114	114
Silviculture	141	141	141	141	141
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08096	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	3	3	3	3	3
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08097	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08098	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	1	1	1	1	1
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08025	37	37	37	37	37
Rural	33	33	33	31	29
Agriculture	15	15	15	14	13
Silviculture	18	18	18	17	16
Mining	--	--	--	--	--
Urban	4	4	4	6	8
Construction	--	--	--	2	2
Livingston County	312	312	312	312	312
Outside ORB	166	166	166	166	166
Inside ORB	146	146	146	146	146
Rural	146	146	146	146	146
Agriculture	94	94	94	94	94
Silviculture	52	52	52	52	52
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08009	41	41	41	41	41
Rural	41	41	41	41	41
Agriculture	27	27	27	27	27
Silviculture	14	14	14	14	14
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08010	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	6	6	6	6	6
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08011	36	36	36	36	36
Rural	36	36	36	36	36
Agriculture	23	23	23	23	23
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08224	38	38	38	38	38
Rural	38	38	38	38	38
Agriculture	24	24	24	24	24
Silviculture	14	14	14	14	14
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08225	21	21	21	21	21
Rural	21	21	21	21	21
Agriculture	14	14	14	14	14
Silviculture	7	7	7	7	7
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Mason County	238	238	238	238	238
Outside ORB	152	152	152	152	152
Inside ORB	86	86	86	86	86
Rural	84	84	84	83	79
Agriculture	54	54	54	54	51
Silviculture	30	30	30	29	28
Mining	--	--	--	--	--
Urban	2	2	2	3	7
Construction	--	--	--	1	4
Segment 08087	9	9	9	9	9
Rural	9	9	9	9	9
Agriculture	6	6	6	6	6
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08088	18	18	18	18	18
Rural	18	18	18	18	18
Agriculture	12	12	12	12	12
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08089	24	24	24	24	24
Rural	24	24	24	24	24
Agriculture	15	15	15	15	15
Silviculture	9	9	9	9	9
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08090	7	7	7	7	7
Rural	6	6	6	6	5
Agriculture	4	4	4	4	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08091	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08205	14	14	14	14	14
Rural	13	13	13	12	9
Agriculture	8	8	8	8	6
Silviculture	5	5	5	4	3
Mining	--	--	--	--	--
Urban	1	1	1	2	5
Construction	--	--	--	1	3

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08206	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
McCracken County	250	250	250	250	250
Outside ORB	101	101	101	101	101
Inside ORB	149	149	149	149	149
Rural	122	122	122	122	118
Agriculture	83	83	83	83	80
Silviculture	39	39	39	39	38
Mining	--	--	--	--	--
Urban	27	27	27	27	31
Construction	--	--	--	--	4
Segment 08003	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08004	17	17	17	17	17
Rural	17	17	17	17	17
Agriculture	12	12	12	12	12
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08005	17	17	17	17	17
Rural	11	11	11	11	11
Agriculture	7	7	7	7	7
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	6	6	6	6	6
Construction	--	--	--	--	--
Segment 08006	9	9	9	9	9
Rural	5	5	5	5	4
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	1
Mining	--	--	--	--	--
Urban	4	4	4	4	5
Construction	--	--	--	--	1
Segment 08906	1	1	1	1	1
Rural	1	1	1	1	--
Agriculture	1	1	1	1	--
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1
Segment 08007	69	69	69	69	69
Rural	63	63	63	63	61
Agriculture	44	44	44	44	42
Silviculture	19	19	19	19	19
Mining	--	--	--	--	--
Urban	6	6	6	6	8
Construction	--	--	--	--	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08008	23	23	23	23	23
Rural	15	15	15	15	15
Agriculture	10	10	10	10	10
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	8	8	8	8	8
Construction	--	--	--	--	--
Segment 08226	8	8	8	8	8
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	3	3	3	3	3
Construction	--	--	--	--	--
Meade County	305	305	305	305	305
Outside ORB	--	--	--	--	--
Inside ORB	305	305	305	305	305
Rural	294	294	294	292	288
Agriculture	192	192	192	190	188
Silviculture	102	102	102	102	100
Mining	--	--	--	--	--
Urban	11	11	11	11	11
Construction	--	--	--	2	4
Segment 08037	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	1	1	1	1	1
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08038	7	7	7	7	7
Rural	7	7	7	7	7
Agriculture	3	3	3	3	3
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08039	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	4	4	4	4	4
Silviculture	4	4	4	4	4
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08040	6	6	6	6	6
Rural	5	5	5	5	5
Agriculture	2	2	2	2	2
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 08041	33	33	33	33	33
Rural	32	32	32	32	32
Agriculture	16	16	16	16	16
Silviculture	16	16	16	16	16
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08042	60	60	60	60	60
Rural	58	58	58	58	58
Agriculture	34	34	34	34	34
Silviculture	24	24	24	24	24
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08043	65	65	65	65	65
Rural	63	63	63	62	60
Agriculture	47	47	47	46	45
Silviculture	16	16	16	16	15
Mining	--	--	--	--	--
Urban	2	2	2	3	5
Construction	--	--	--	1	2
Segment 08044	64	64	64	64	64
Rural	62	62	62	62	62
Agriculture	52	52	52	52	52
Silviculture	10	10	10	10	10
Mining	--	--	--	--	--
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08216	22	22	22	22	22
Rural	20	20	20	19	17
Agriculture	5	5	5	4	3
Silviculture	5	5	5	5	4
Mining	--	--	--	--	--
Urban	2	2	2	3	5
Construction	--	--	--	1	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08217	37	37	37	37	37
Rural	36	36	36	36	36
Agriculture	18	18	18	18	18
Silviculture	18	18	18	18	18
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Oldham County	184	184	184	184	184
Outside ORB	58	58	58	58	58
Inside ORB	126	126	126	126	126
Rural	122	122	122	111	80
Agriculture	95	95	95	85	60
Silviculture	27	27	27	26	20
Mining	--	--	--	--	--
Urban	4	4	4	15	46
Construction	--	--	--	11	31
Segment 08050	22	22	22	22	22
Rural	22	22	22	17	3
Agriculture	18	18	18	14	2
Silviculture	4	4	4	3	1
Mining	--	--	--	--	--
Urban	--	--	--	5	19
Construction	--	--	--	5	14
Segment 08051	32	32	32	32	32
Rural	32	32	32	29	20
Agriculture	26	26	26	23	16
Silviculture	6	6	6	6	4
Mining	--	--	--	--	--
Urban	--	--	--	3	12
Construction	--	--	--	3	9

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08052	31	31	31	31	31
Rural	27	27	27	25	21
Agriculture	22	22	22	20	17
Silviculture	5	5	5	5	4
Mining	--	--	--	--	--
Urban	4	4	4	6	10
Construction	--	--	--	2	4
Segment 08053	16	16	16	16	16
Rural	16	16	16	16	16
Agriculture	10	10	10	10	10
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08054	7	7	7	7	7
Rural	7	7	7	7	6
Agriculture	4	4	4	4	4
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1
Segment 08212	16	16	16	16	16
Rural	16	16	16	15	13
Agriculture	13	13	13	12	10
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	1	3
Construction	--	--	--	1	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08213	2	2	2	2	2
Rural	2	2	2	2	1
Agriculture	2	2	2	2	1
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	1
Construction	--	--	--	--	1
Pendleton County	279	279	279	279	279
Outside ORB	259	259	259	259	259
Inside ORB	20	20	20	20	20
Rural	20	20	20	20	20
Agriculture	14	14	14	14	14
Silviculture	6	6	6	6	6
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08080	3	3	3	3	3
Rural	3	3	3	3	3
Agriculture	2	2	2	2	2
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	---	--	--	--	--
Construction	--	--	--	--	--
Segment 08082	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	6	6	6	6	6
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08083	5	5	5	5	5
Rural	5	5	5	5	5
Agriculture	3	3	3	3	3
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08207	4	4	4	4	4
Rural	4	4	4	4	4
Agriculture	3	3	3	3	3
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Rowan County	290	290	290	290	290
Outside ORB	280	280	280	280	280
Inside ORB	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	5	5	5	5	5
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 06013	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	5	5	5	5	5
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Trimble County	146	146	146	146	146
Outside ORB	47	47	47	47	47
Inside ORB	99	99	99	99	99
Rural	95	95	95	95	90
Agriculture	57	57	57	57	56
Silviculture	38	38	38	38	34
Mining	--	--	--	--	--
Urban	4	4	4	4	9
Construction	--	--	--	--	5
Segment 08054	8	8	8	8	8
Rural	7	7	7	7	6
Agriculture	4	4	4	4	4
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08055	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08056	9	9	9	9	9
Rural	8	8	8	8	6
Agriculture	5	5	5	5	4
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	1	1	1	1	3
Construction	--	--	--	--	2

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08057	32	32	32	32	32
Rural	32	32	32	32	32
Agriculture	19	19	19	19	19
Silviculture	13	13	13	13	13
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08058	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	4	4	4	4	4
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08059	3	3	3	3	3
Rural	2	2	2	2	1
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	--
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Segment 08060	8	8	8	8	8
Rural	8	8	8	8	8
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08212	25	25	25	25	25
Rural	24	24	24	24	23
Agriculture	14	14	14	14	14
Silviculture	10	10	10	10	9
Mining	--	--	--	--	--
Urban	1	1	1	1	2
Construction	--	--	--	--	1
Union County	340	340	340	340	340
Outside ORB	--	--	--	--	--
Inside ORB	340	340	340	340	340
Rural	327	327	327	326	321
Agriculture	260	260	260	256	246
Silviculture	53	53	53	52	50
Mining	14	14	14	18	25
Urban	13	13	13	14	19
Construction	--	--	--	1	5
Segment 08015	28	28	28	28	28
Rural	28	28	28	28	28
Agriculture	23	23	23	23	23
Silviculture	5	5	5	5	5
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08915	1	1	1	1	1
Rural	1	1	1	1	1
Agriculture	1	1	1	1	1
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08016	71	71	71	71	71
Rural	69	69	69	69	69
Agriculture	56	56	56	55	54
Silviculture	11	11	11	11	11
Mining	2	2	2	3	4
Urban	2	2	2	2	2
Construction	--	--	--	--	--
Segment 08017	10	10	10	10	10
Rural	10	10	10	10	10
Agriculture	8	8	8	8	8
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08018	26	26	26	26	26
Rural	21	21	21	20	17
Agriculture	18	18	18	17	15
Silviculture	3	3	3	3	2
Mining	--	--	--	--	--
Urban	5	5	5	6	9
Construction	--	--	--	1	3
Segment 08019	1	1	1	1	1
Rural	1	1	1	1	1
Agriculture	1	1	1	1	1
Silviculture	--	--	--	--	--
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 08020	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08021	95	95	95	95	95
Rural	93	93	93	93	92
Agriculture	78	78	78	78	77
Silviculture	15	15	15	15	15
Mining	--	--	--	--	--
Urban	2	2	2	2	3
Construction	--	--	--	--	1
Segment 10001	8	8	8	8	8
Rural	7	7	7	7	7
Agriculture	6	6	6	6	6
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 10002	48	48	48	48	48
Rural	46	46	46	46	45
Agriculture	28	28	28	26	20
Silviculture	6	6	6	5	4
Mining	12	12	12	15	21
Urban	2	2	2	2	3
Construction	--	--	--	--	1

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10003	10	10	10	10	10
Rural	9	9	9	9	9
Agriculture	7	7	7	7	7
Silviculture	2	2	2	2	2
Mining	--	--	--	--	--
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 10004	19	19	19	19	19
Rural	19	19	19	19	19
Agriculture	16	16	16	16	16
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08222	6	6	6	6	6
Rural	6	6	6	6	6
Agriculture	5	5	5	5	5
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 08223	15	15	15	15	15
Rural	15	15	15	15	15
Agriculture	12	12	12	12	12
Silviculture	3	3	3	3	3
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Webster County	339	339	339	339	339
Outside ORB	140	140	140	140	140
Inside ORB	199	199	199	199	199
Rural	193	193	193	192	189
Agriculture	122	122	122	120	112
Silviculture	58	58	58	56	53
Mining	13	13	13	16	24
Urban	6	6	6	7	10
Construction	--	--	--	1	3
Segment 08021	34	34	34	34	34
Rural	34	34	34	34	34
Agriculture	23	23	23	23	23
Silviculture	11	11	11	11	11
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10004	120	120	120	120	120
Rural	116	116	116	115	112
Agriculture	72	72	72	70	63
Silviculture	33	33	33	31	29
Mining	11	11	11	14	20
Urban	4	4	4	5	8
Construction	--	--	--	1	3
Segment 10005	28	28	28	28	28
Rural	28	28	28	28	28
Agriculture	19	19	19	19	19
Silviculture	9	9	9	9	9
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--

EXHIBIT A-6t (Continued) LAND USE DISAGGREGATION FOR THE OHIO RIVER BASIN

Area of Coverage	1960	1970	1975	1980	1995
Segment 10006	5	5	5	5	5
Rural	4	4	4	4	4
Agriculture	2	2	2	2	1
Silviculture	1	1	1	1	1
Mining	1	1	1	1	2
Urban	1	1	1	1	1
Construction	--	--	--	--	--
Segment 10007	2	2	2	2	2
Rural	2	2	2	2	2
Agriculture	1	1	1	1	1
Silviculture	1	1	1	1	1
Mining	--	--	--	--	--
Urban	--	--	--	--	--
Construction	--	--	--	--	--
Segment 10008	10	10	10	10	10
Rural	9	9	9	9	9
Agriculture	5	5	5	5	5
Silviculture	3	3	3	3	2
Mining	1	1	1	1	2
Urban	1	1	1	1	1
Construction	--	--	--	--	--

EXHIBIT A-7t SURFACE AREA DISAGGEGATION FOR THE OHIO RIVER BASIN

County Breakdown	Total Surface Area		% of Total
	Acres	Sq. Miles	
Thirty-four county total	6994560	10929	100%
Outside ORB	3269760	5109	47
Inside ORB	3724800	5820	53
Ballard County	165760	259	100%
Outside ORB	85760	134	52
Inside ORB	80000	125	48
Boone County	159360	249	100%
Outside ORB	17280	27	11
Inside ORB	142080	222	89
Boyd County	101760	159	100%
Outside ORB	24320	38	24
Inside ORB	77440	121	76
Bracken County	130560	204	100%
Outside ORB	53760	84	41
Inside ORB	76800	120	59
Breckinridge County	360960	564	100%
Outside ORB	140800	220	39
Inside ORB	220160	344	61
Caldwell County	228480	357	100%
Outside ORB	101120	158	44
Inside ORB	127360	199	56
Campbell County	95360	149	100%
Outside ORB	33280	52	35
Inside ORB	62080	97	65
Carroll County	83200	130	100%
Outside ORB	52480	82	63
Inside ORB	30720	48	37

EXHIBIT A-7t (Continued) SURFACE AREA DISAGGREGATION FOR THE OHIO RIVER BASIN

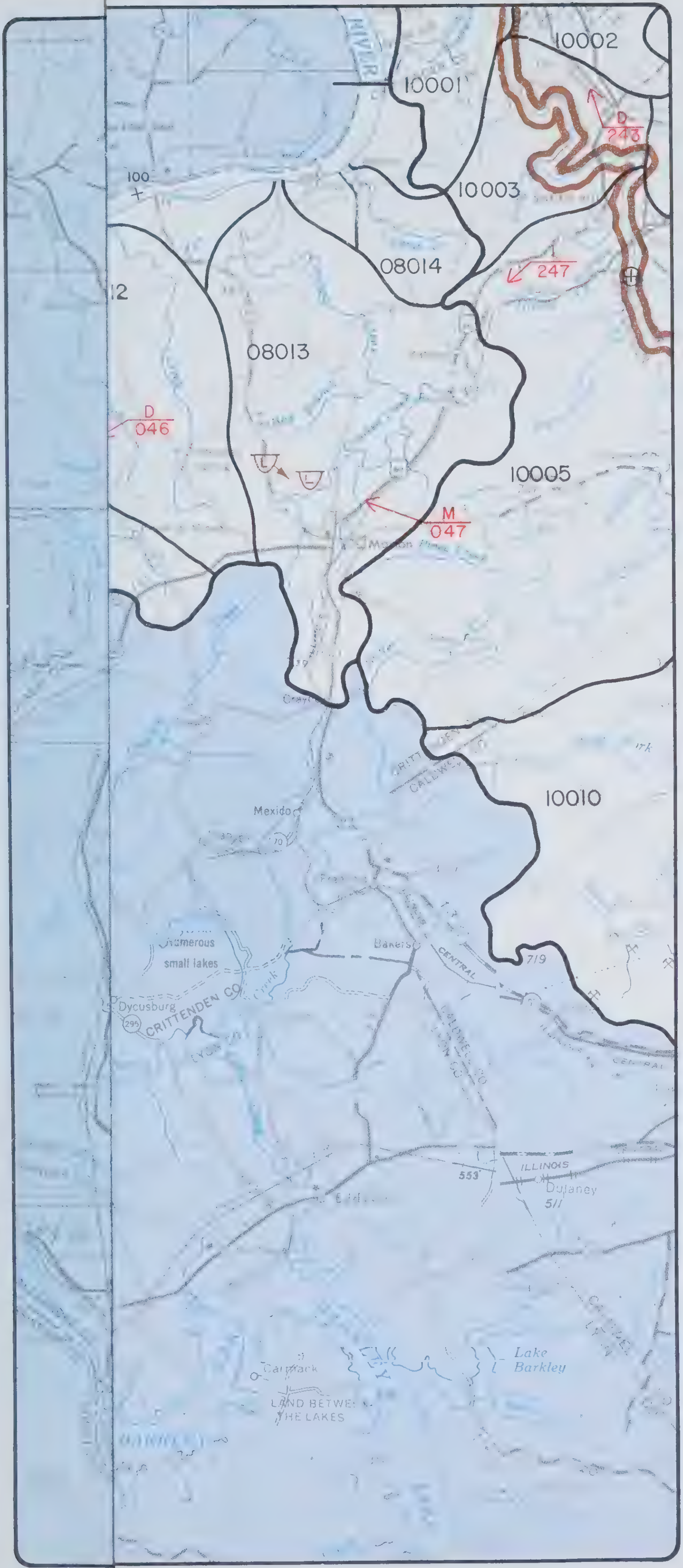
County Breakdown	Total Surface Area		% of Total
	Acres	Sq. Miles	
Carter County	257280	402	100%
Outside ORB	0	0	0
Inside ORB	257280	402	100
Christian County	464640	726	100%
Outside ORB	400640	626	86
Inside ORB	64000	100	14
Crittenden County	233600	365	100%
Outside ORB	48000	75	21
Inside ORB	185600	290	79
Daviess County	295680	462	100%
Outside ORB	218880	342	74
Inside ORB	76800	120	26
Elliott County	153600	240	100%
Outside ORB	6400	10	4
Inside ORB	147200	230	96
Gallatin County	64000	100	100%
Outside ORB	14080	22	22
Inside ORB	49920	78	78
Greenup County	224640	351	100%
Outside ORB	0	0	0
Inside ORB	224640	351	100
Hancock County	119680	187	100%
Outside ORB	26240	41	22
Inside ORB	93440	146	78
Hardin County	394240	616	100%
Outside ORB	343680	537	87
Inside ORB	50560	79	13

EXHIBIT A-7t (Continued) SURFACE AREA DISAGGREGATION FOR THE OHIO RIVER BASIN

County Breakdown	Total Surface Area		% of Total
	Acres	Sq. Miles	
Henderson County	277120	433	100%
Outside ORB	95360	149	34
Inside ORB	181760	284	66
Henry County	184960	289	100%
Outside ORB	179200	280	97
Inside ORB	5760	9	3
Hopkins County	353920	553	100%
Outside ORB	174720	273	49
Inside ORB	179200	280	51
Jefferson County	240000	375	100%
Outside ORB	131200	205	55
Inside ORB	108800	170	45
Kenton County	105600	165	100%
Outside ORB	92160	144	87
Inside ORB	13440	21	13
Lawrence County	272000	425	100%
Outside ORB	246400	385	91
Inside ORB	25600	40	9
Lewis County	311040	486	100%
Outside ORB	14080	22	5
Inside ORB	296960	464	95
Livingston County	199680	312	100%
Outside ORB	106240	166	53
Inside ORB	93440	146	47
Mason County	152320	238	100%
Outside ORB	97280	152	64
Inside ORB	55040	86	36

EXHIBIT A-7t (Continued) SURFACE AREA DISAGGREGATION FOR THE OHIO RIVER BASIN

County Breakdown	Total Surface Area		% of Total
	Acres	Sq. Miles	
McCracken County	160000	250	100%
Outside ORB	64640	101	40
Inside ORB	95360	149	60
Meade County	195200	305	100
Outside ORB	0	0	0
Inside ORB	195200	305	100
Oldham County	117760	184	100%
Outside ORB	37120	58	32
Inside ORB	80640	126	68
Pendleton County	178560	279	100%
Outside ORB	165760	259	93
Inside ORB	12800	20	7
Rowan County	185600	290	100%
Outside ORB	179200	280	97
Inside ORB	6400	10	3
Trimble County	93440	146	100%
Outside ORB	30080	47	32
Inside ORB	63360	99	68
Union County	217600	340	100%
Outside ORB	0	0	0
Inside ORB	217600	340	100
Webster County	216960	339	100%
Outside ORB	89600	140	41
Inside ORB	127360	199	59


RIVER
10002
10001
D 248
100
10003
08014
I 247
12
08013
D 046
10005
M 047
Marion
CRITTENDEN CO
CALDWELL CO
10010
Mexico
Numerous small lakes
Bakers
719
CENTRAL
Dycusburg
295
CRITTENDEN CO
LYON CO
CALDWELL CO
553
ILLINOIS
Dulaney
511
Carmack
Lake Barkley
LAND BETWEEN THE LAKES

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-1.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08Q57	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

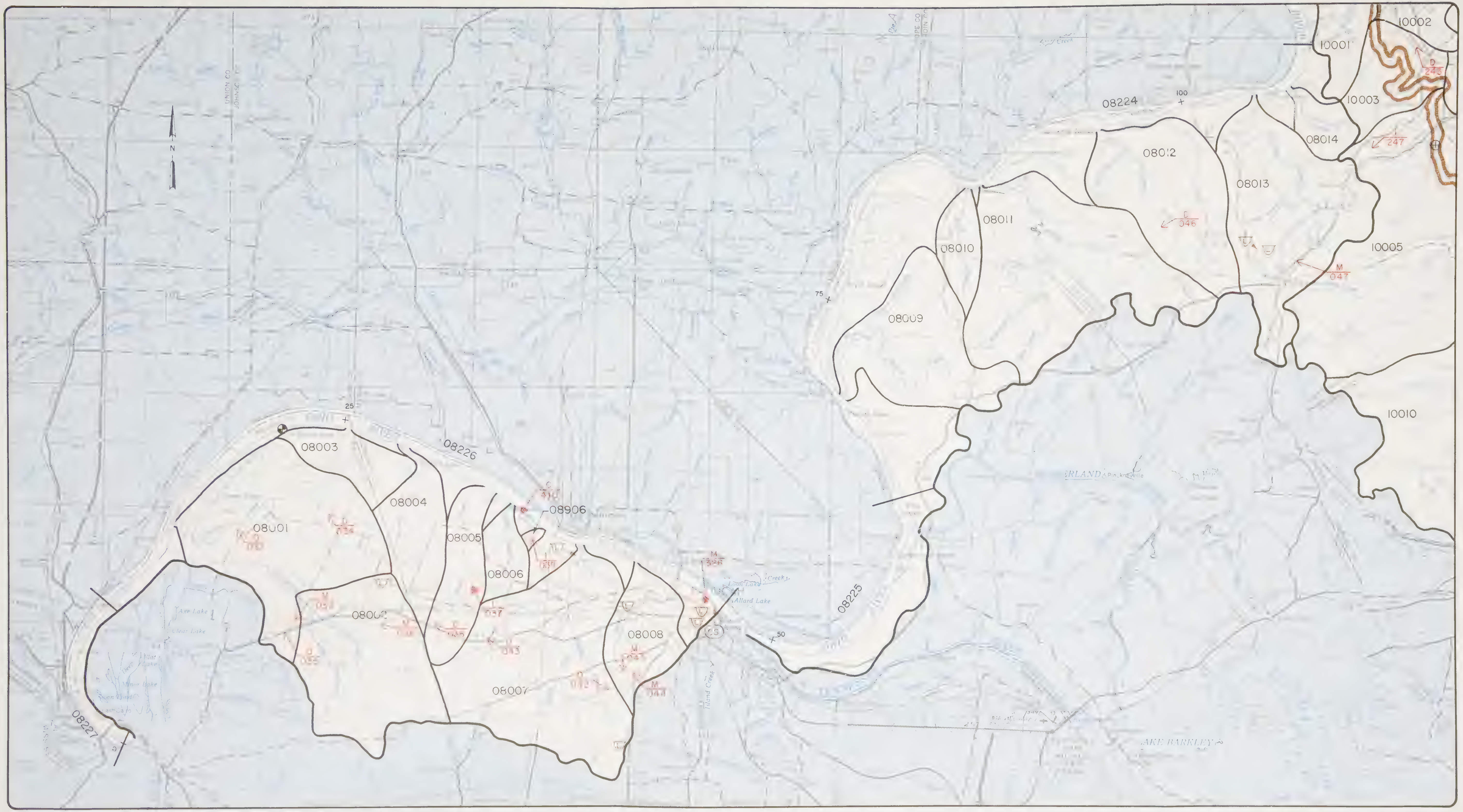
Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

METCALF & EDDY, INC.
Boston New York Palo Alto Chicago


10002
10001
D
245
10003
08224
100
08014
247
08012
D
046
08013
10005
08011
08010
M
047
75
08009
10010
25
08003
08226
08004
C
310
08906
08001
08005
08006
M
326
Long Lake
Allard Lake
08225
08002
037
50
CS
08008
08007
M
044
08227
LAKE BARKLEY
Island Creek

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-1.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
▬	BASIN OUTLINE
08057	SEGMENT NUMBERS
―	SEGMENT BOUNDARIES
+	RIVER MILES

DISCHARGERS

▼	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
▲	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
▲	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
▼	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS)	CITIES WITH COMBINED SEWERS
▭	ACID MINE DRAINAGE
	MINING OR QUARRYING
	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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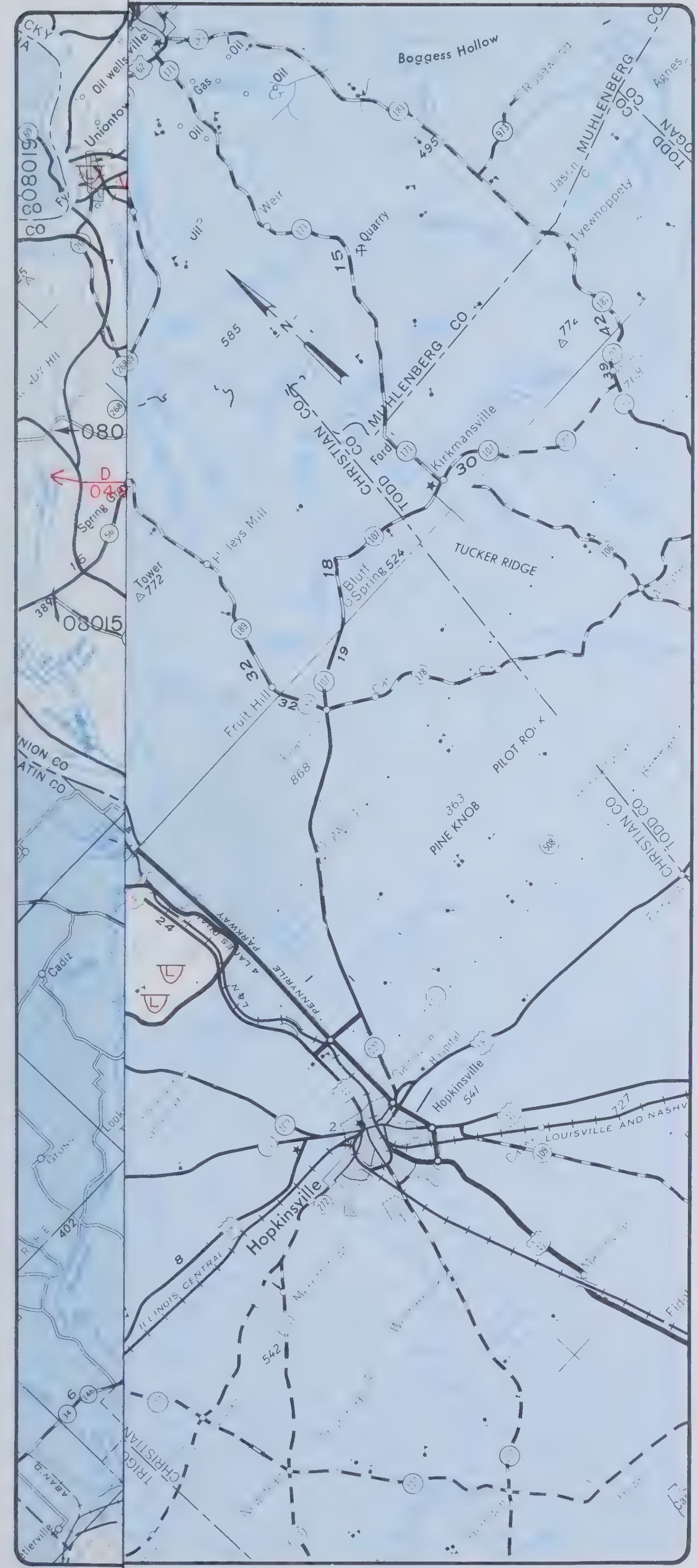
Boggess Hollow
Oil wells
Uniontown
Gas
Oil
Weir
Quarry
MUHLENBERG CO
TODD CO
LOGAN CO
Jason
Tyewnoppety
Agnes
N
585
772
CHRISTIAN CO
TODD CO
Ford
Kirkmansville
30
TUCKER RIDGE
Bluff Spring 524
Haleys Mill
Tower 772
Spring
08015
080
D 048
Fruit Hill
32
18
19
15
42
39
868
PILOT ROCK
363 PINE KNOB
CHRISTIAN CO
TODD CO
UNION CO
LATIN CO
Cadiz
24
PENNYRILE PARKWAY
L&N
Hospital
Hopkinsville 541
727
LOUISVILLE AND NASHVILLE
Hopkinsville
8
ILLINOIS CENTRAL
402
542
6
TRIGG
CHRISTIAN
08019

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-2.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+475 RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕ PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS) CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

5 0 5
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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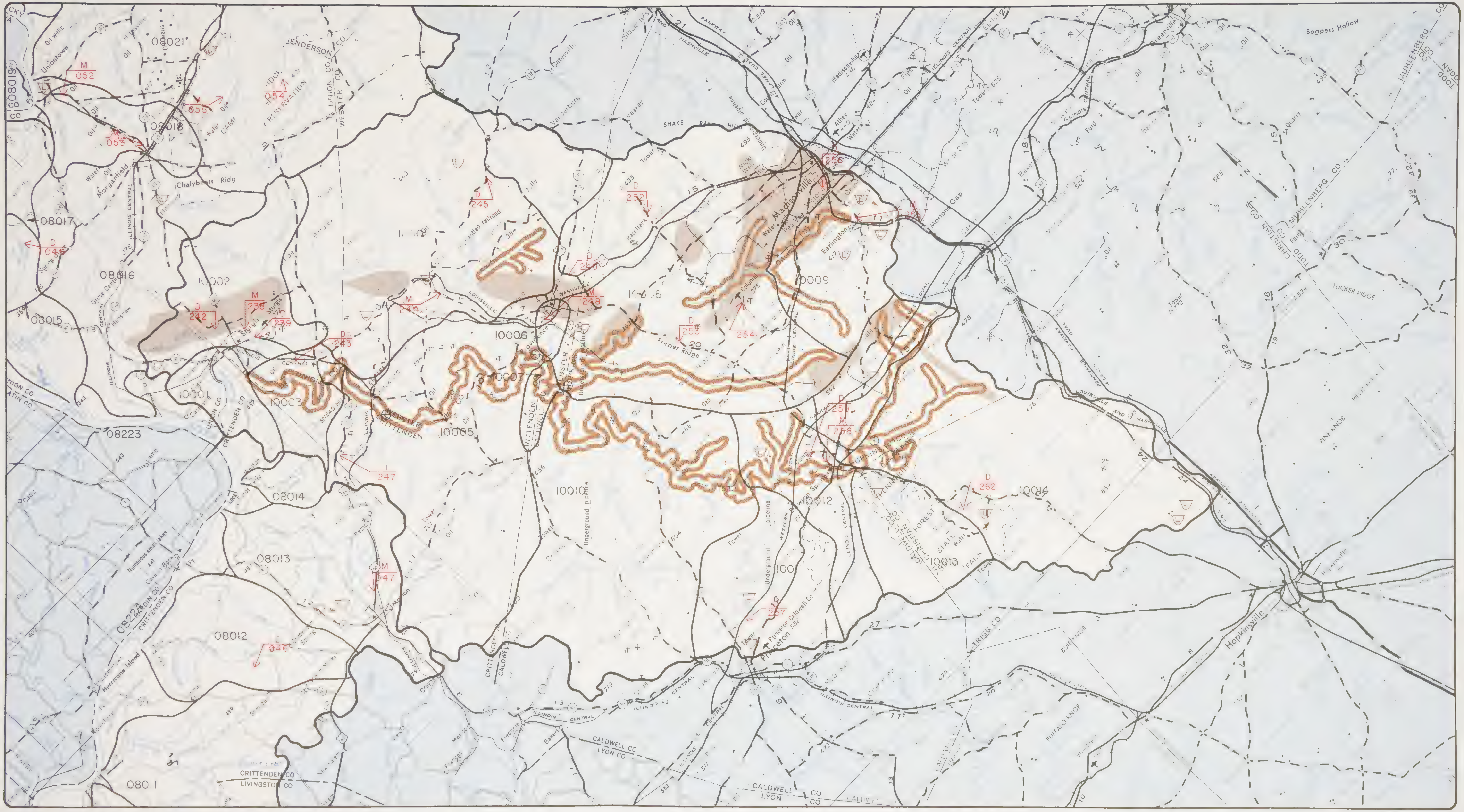

08021
08019
08018
08017
08016
08015
10002
10001
10003
10005
10006
10007
10008
10009
10010
10012
10013
10014
08223
08222
08014
08013
08012
08011
Madisonville
Earlington
Nortonville
Princeton
Hopkinsville
Morganfield
Uniontown
Sturgis
Providence
Marion
SHAKE RAG HILLS
Frazier Ridge
Chalybeate Ridge
Hurricane Island
Tucker Ridge
Boggess Hollow
Morton Gap
HENDERSON CO
UNION CO
WEBSTER CO
CRITTENDEN CO
CALDWELL CO
HOPKINS CO
CHRISTIAN CO
MUHLENBERG CO
TODD CO
TRIGG CO
LYON CO
LIVINGSTON CO
PENNYRILE FOREST STATE PARK

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-2.1m

SEGMENT MAP

LEGEND

– – – – –	COUNTY OUTLINES
	STREAMS
▬▬▬	BASIN OUTLINE
08057	SEGMENT NUMBERS
———	SEGMENT BOUNDARIES
+ 475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 77	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

	CITIES WITH COMBINED SEWERS
⊂⊃	ACID MINE DRAINAGE
▬	MINING OR QUARRYING
⊔	LANDFILLS DUMPS JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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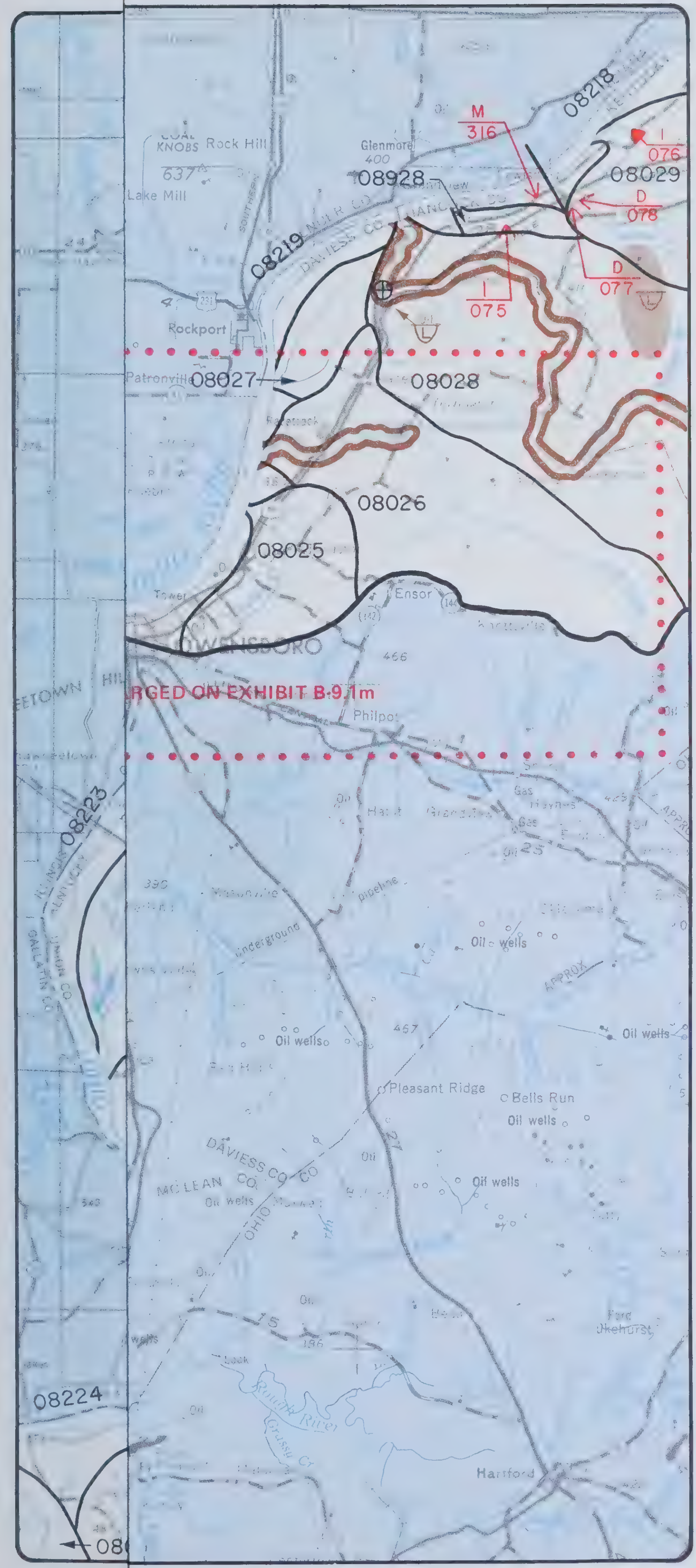
COAL KNOBS
Rock Hill
637
Lake Mill
Glenmore
400
M
316
08218
I
076
08928
08029
D
078
08219
DAVIESS CO
D
077
I
075
Rockport
Patronville
08027
08028
08026
08025
Ensor
Tower
OWENSBORO
466
ETOWN
HILL
LARGED ON EXHIBIT B-9.1m
Philpot
Gas
Oil
Oil wells
08223
UNION CO
GALLATIN CO
390
pipeline
Underground
APPROX
467
Pleasant Ridge
Bells Run
DAVIESS CO
MC LEAN CO
OHIO CO
15
Rough River
Grassy Cr
Hartford
Ford
Okehurst
08224
08

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-3.1m

SEGMENT MAP

LEGEND

- - -	COUNTY OUTLINES
═	STREAMS
━	BASIN OUTLINE
08057	SEGMENT NUMBERS
─	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M/166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M/177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D/391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D/148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I/037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I/294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C/401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

●	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
═	ACID MINE DRAINAGE
▨	MINING OR QUARRYING
▽	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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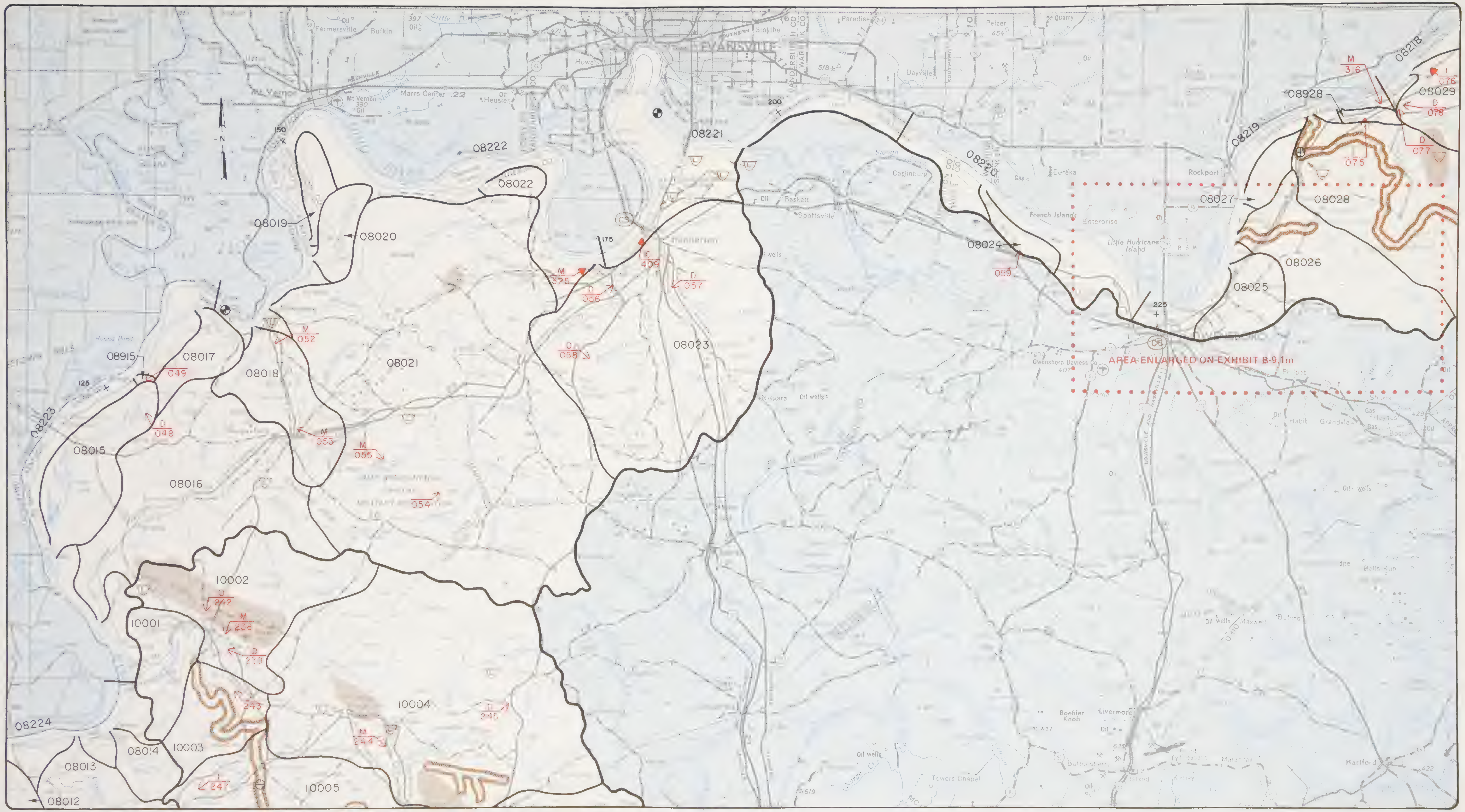
Evansville
Mt Vernon
Farmersville
Bufkin
Marrs Center
Howell
Henderson
Baskett
Spottsville
Cairnburg
Eureka
Rockport
French Islands
Enterprise
Little Hurricane Island
Owensboro
Niagara
Livermore
Hartford
Towers Chapel
08222
08022
08221
08019
08020
08021
08023
08017
08018
08915
08223
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08016
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08025
08026
08219
08928
08029
08218
150
175
125
200
225
M 325
C 409
D 056
D 057
M 052
I 049
D 048
M 353
M 055
D 058
I 054
I 059
D 242
M 238
D 239
I 243
M 244
I 246
I 247
M 316
I 076
D 078
I 075
D 077
AREA ENLARGED ON EXHIBIT B-9.1m
N

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-3.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+475 RIVER MILES

DISCHARGERS

M 166 MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177 PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391 MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148 PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401 POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

5 0 5
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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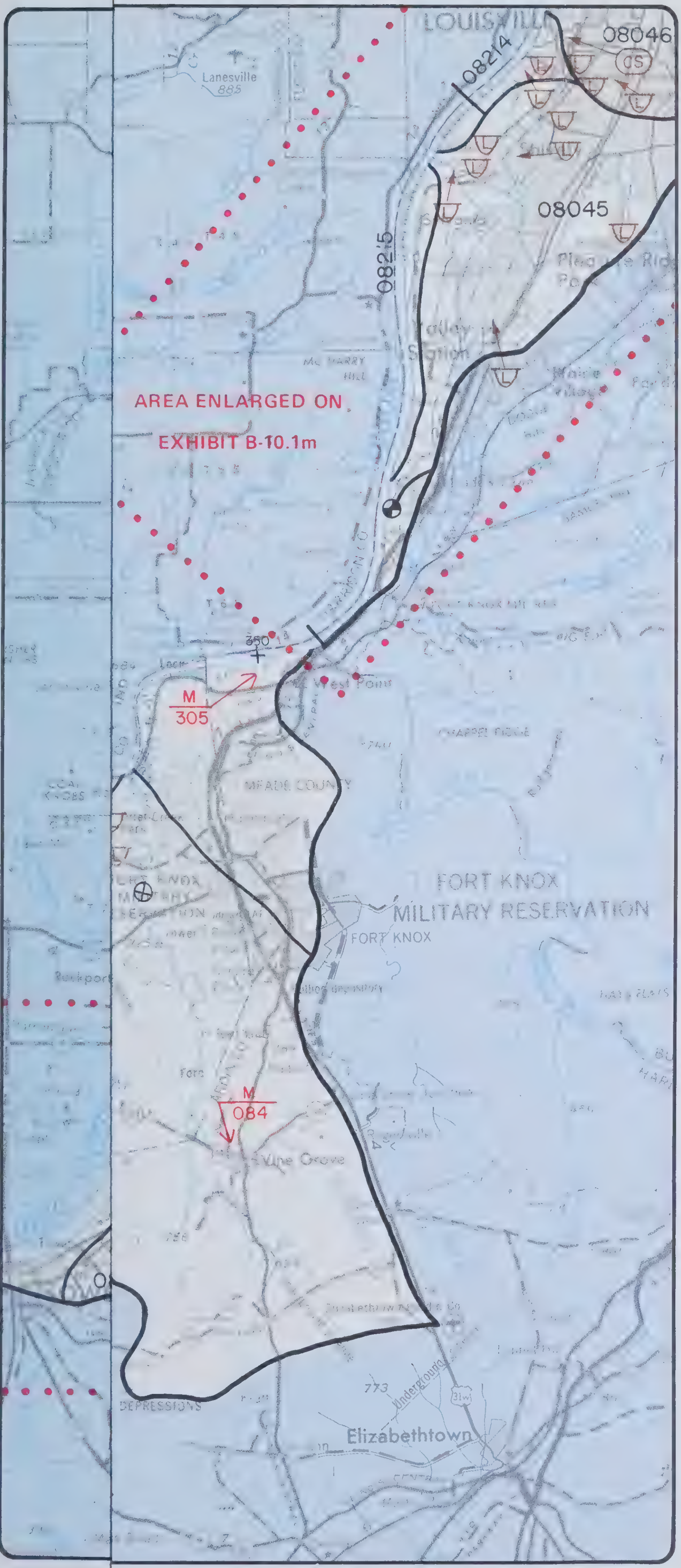
LOUISVILLE
08046
08214
CS
08045
08215
Lanesville
885
AREA ENLARGED ON
EXHIBIT B-10.1m
350
M
305
West Point
MEADE COUNTY
FORT KNOX
MILITARY RESERVATION
FORT KNOX
M
084
Vine Grove
773
31W
Elizabethtown

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-4.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

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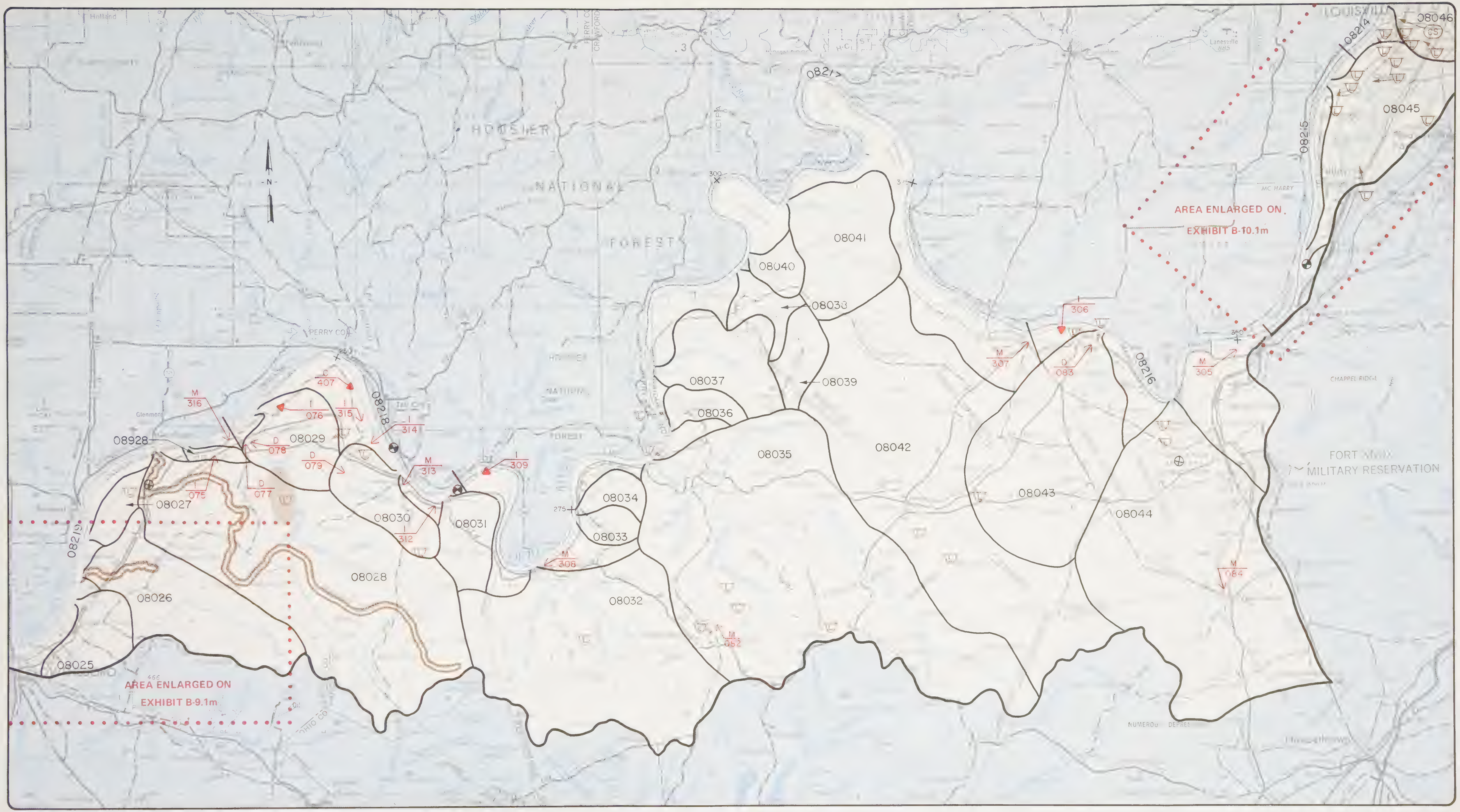
LOUISVILLE
08046
08214
08217
08045
08215
AREA ENLARGED ON EXHIBIT B-10.1m
HOOSIER
NATIONAL
FOREST
N
08041
08040
08038
08039
08037
08036
08035
08042
08043
08044
08216
FORT KNOX MILITARY RESERVATION
M 307
D 083
I 306
M 305
M 084
M 082
08034
08033
08032
08031
08030
08029
08028
08027
08026
08025
08928
08218
08219
PERRY CO
M 316
C 407
I 076
I 315
D 078
D 079
I 075
D 077
M 313
I 314
I 309
M 312
M 308
AREA ENLARGED ON EXHIBIT B-9.1m

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-4.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+ RIVER MILES

DISCHARGERS

MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

● PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

5 0 5
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

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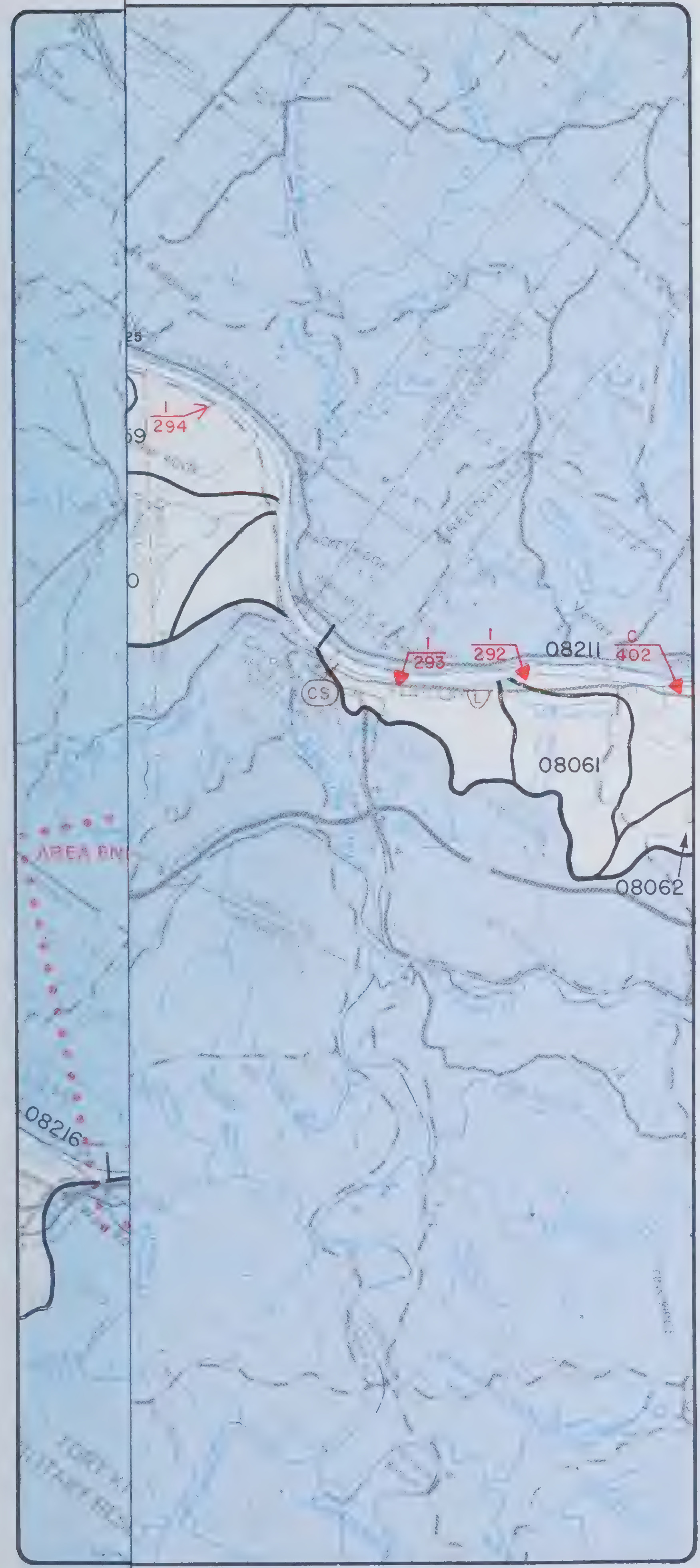

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-5.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
▬	BASIN OUTLINE
08057	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

●	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
▭	ACID MINE DRAINAGE
▬	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

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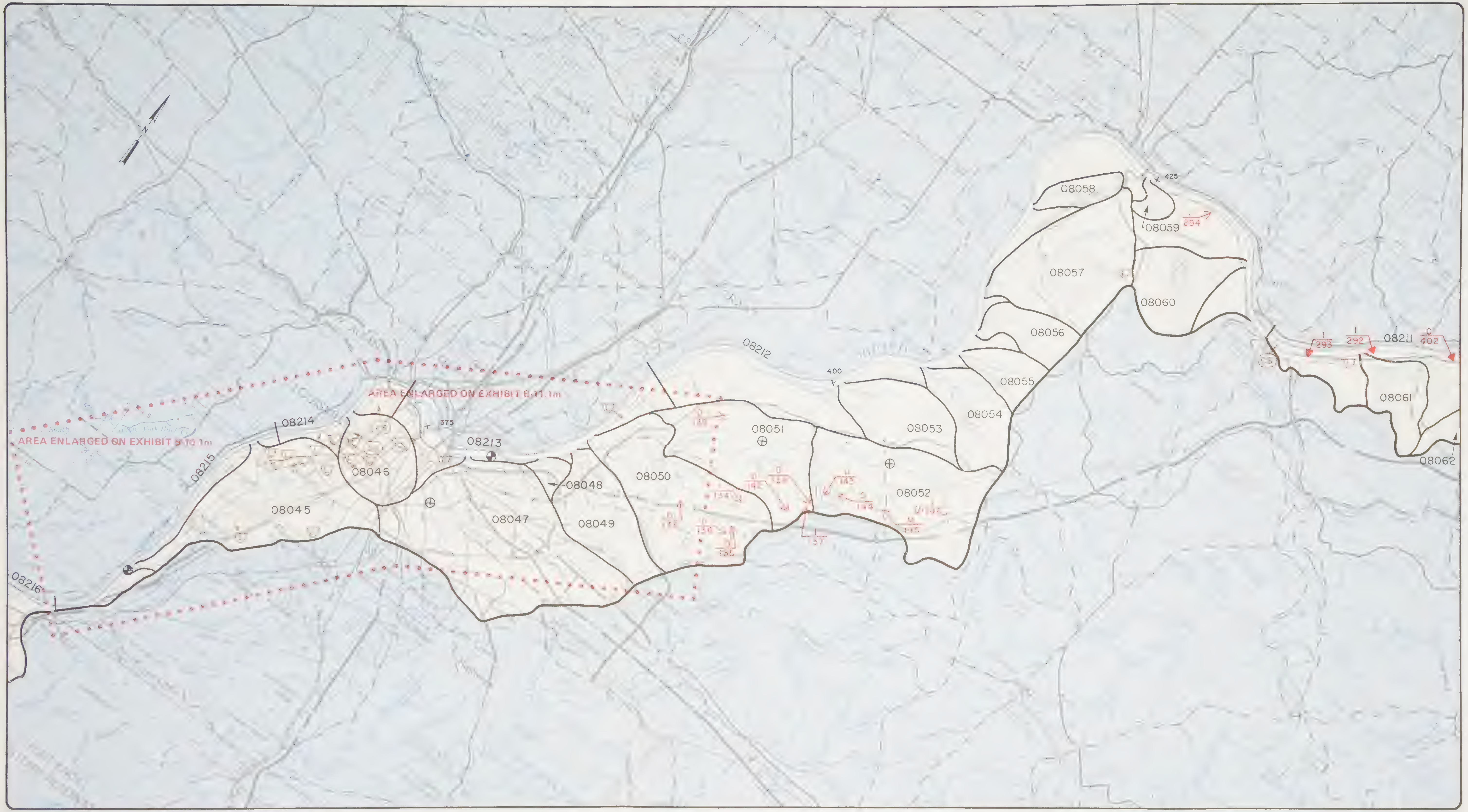

AREA ENLARGED ON EXHIBIT B-11.1m
AREA ENLARGED ON EXHIBIT B-10.1m
08045
08046
08047
08048
08049
08050
08051
08052
08053
08054
08055
08056
08057
08058
08059
08060
08061
08062
08211
08212
08213
08214
08215
08216
375
400
425
294
293
292
402
157
CS

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-5.1m

SEGMENT MAP

LEGEND

—	COUNTY OUTLINES
	STREAMS
—	BASIN OUTLINE
08057	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES
+	RIVER MILES

DISCHARGERS

M	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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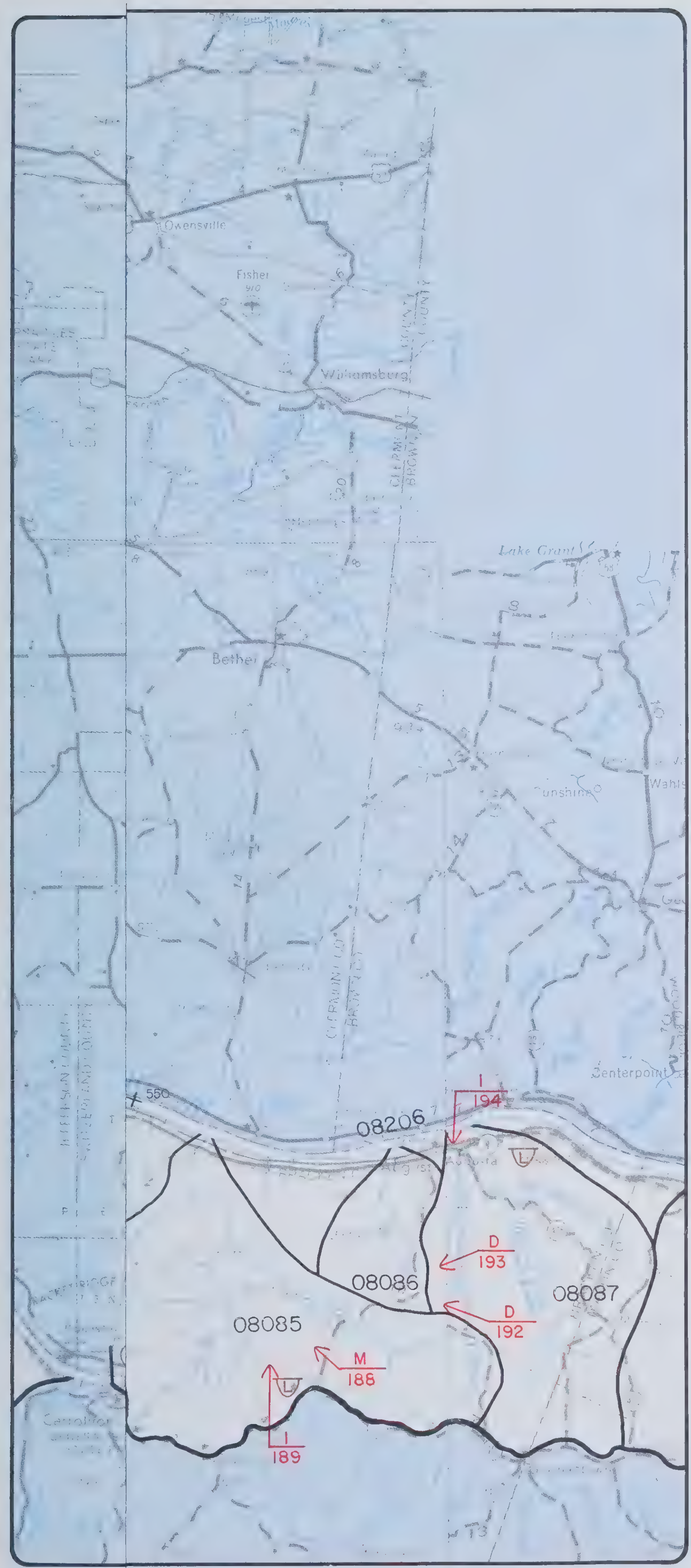
Owensville
Fisher
Williamsburg
Bethel
Lake Grant
Sunshine
Wahls
Centerpoint
550
08206
I 194
D 193
D 192
M 188
I 189
08085
08086
08087

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-6.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS)	CITIES WITH COMBINED SEWERS
▭	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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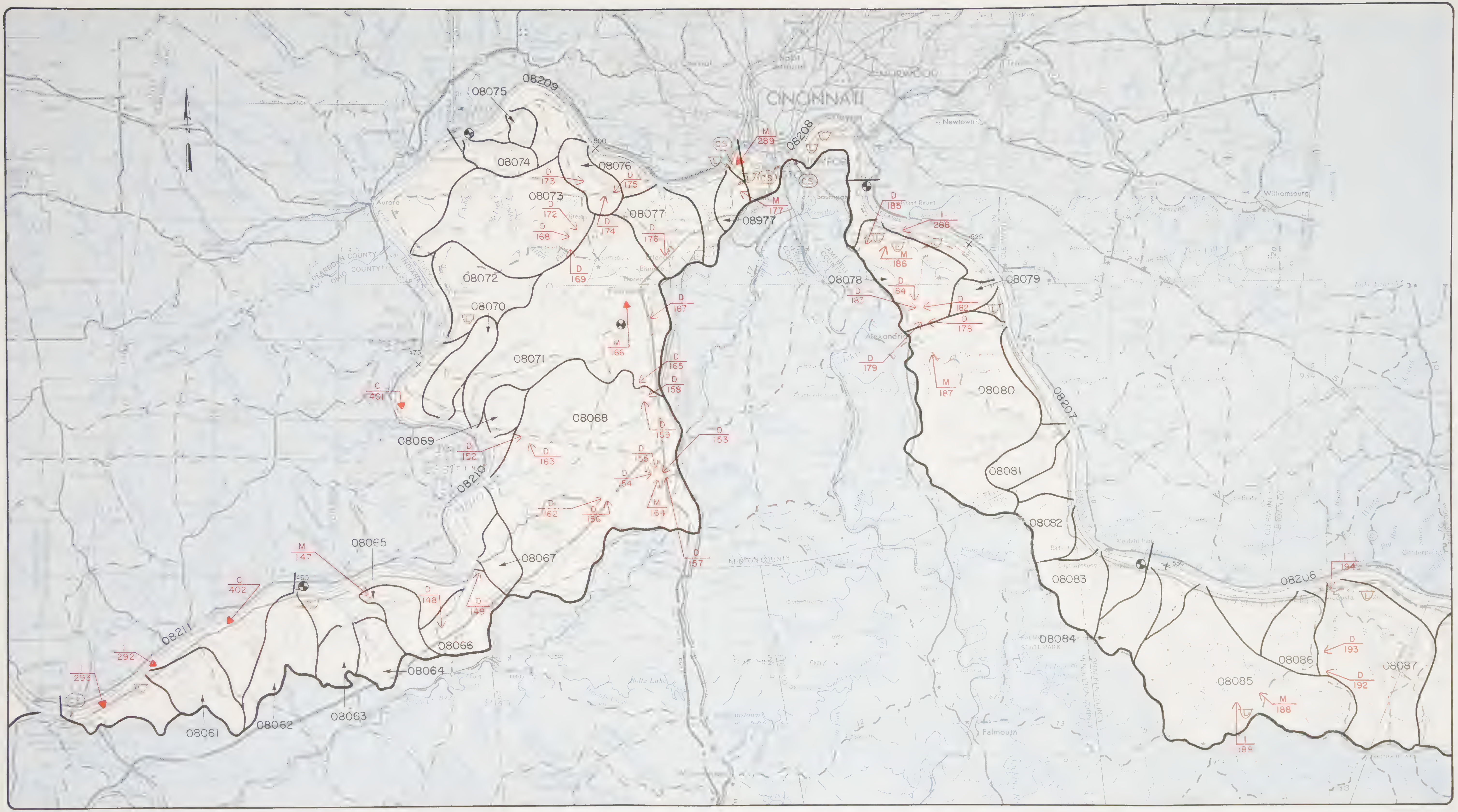

08209
08075
08074
08076
08073
08077
08977
08208
CINCINNATI
NORWOOD
Newtown
Williamsburg
Aurora
DEARBORN COUNTY
OHIO COUNTY
INDIANA
08072
08070
08071
08069
08068
08210
08067
08065
08066
08064
08211
08061
08062
03063
08078
08079
08080
08207
08081
08082
08083
08084
08085
08086
08087
08206
Alexandria
KENTON COUNTY
Falmouth
M 289
D 185
I 288
M 186
D 184
D 183
D 182
D 178
D 179
M 187
D 173
D 175
D 172
D 174
D 168
D 176
D 169
M 177
D 167
M 166
D 165
D 158
D 159
D 153
D 152
D 163
D 155
D 154
D 162
D 156
M 164
D 157
C 401
M 147
C 402
D 148
D 149
I 292
I 293
D 193
D 192
M 188
I 189
194
500
525
550
450
475
N
CS

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-6.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+ RIVER MILES

DISCHARGERS

M/166 MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
C/48 PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

● PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS) CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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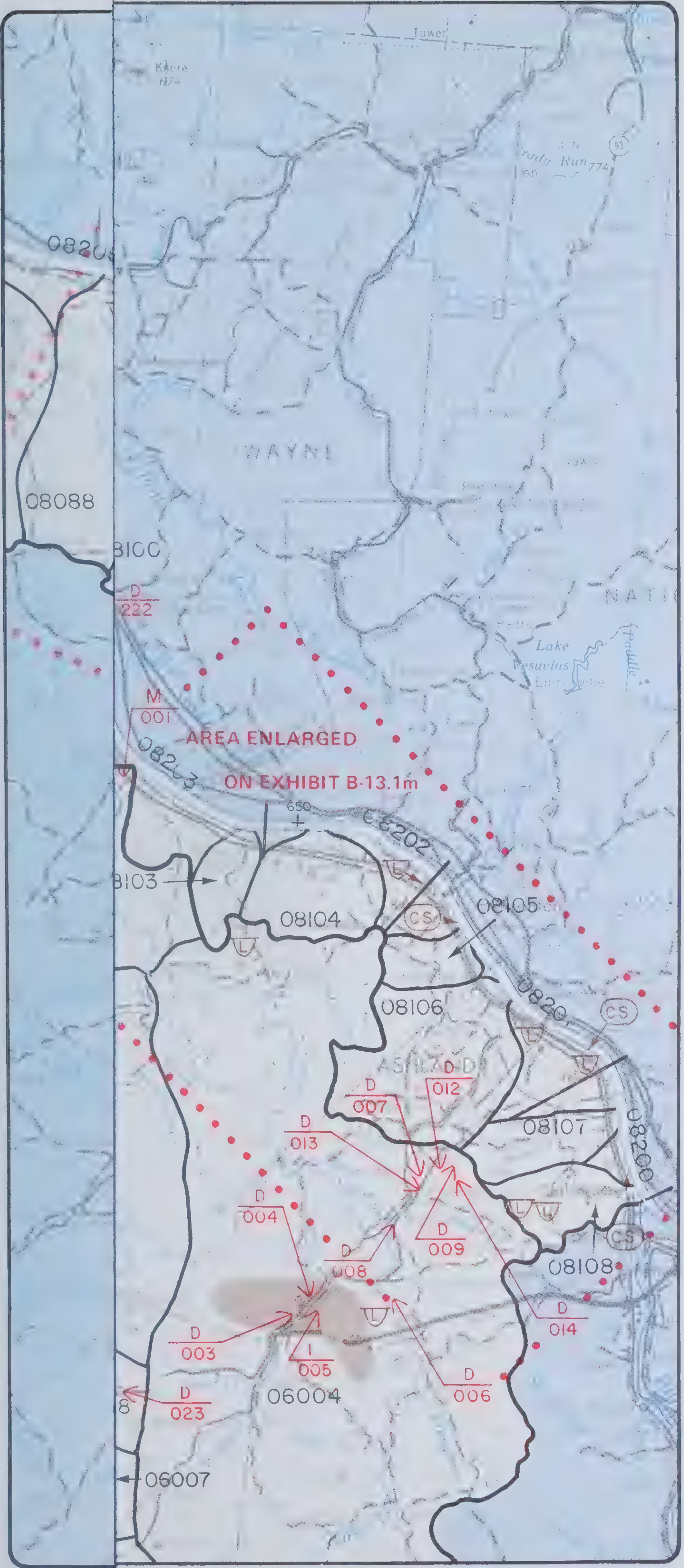
Tower
Knox 874
Grady Run 774
93
08203
WAYNE
08088
8100
D 222
NATI
Lake Vesuvius
M 001
AREA ENLARGED ON EXHIBIT B-13.1m
08203
650
08202
8103
08104
CS
08105
08106
0820
CS
ASHLAND
D 007
D 012
D 013
08107
08200
D 004
D 009
D 008
CS
08108
D 003
I 005
D 014
D 006
D 023
06004
06007

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-7.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+475 RIVER MILES

DISCHARGERS

M 166 MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 77 PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391 MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148 PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037 MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294 PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401 POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕ PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS) CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
L LANDFILLS, DUMPS, JUNK YARDS

5 0 5
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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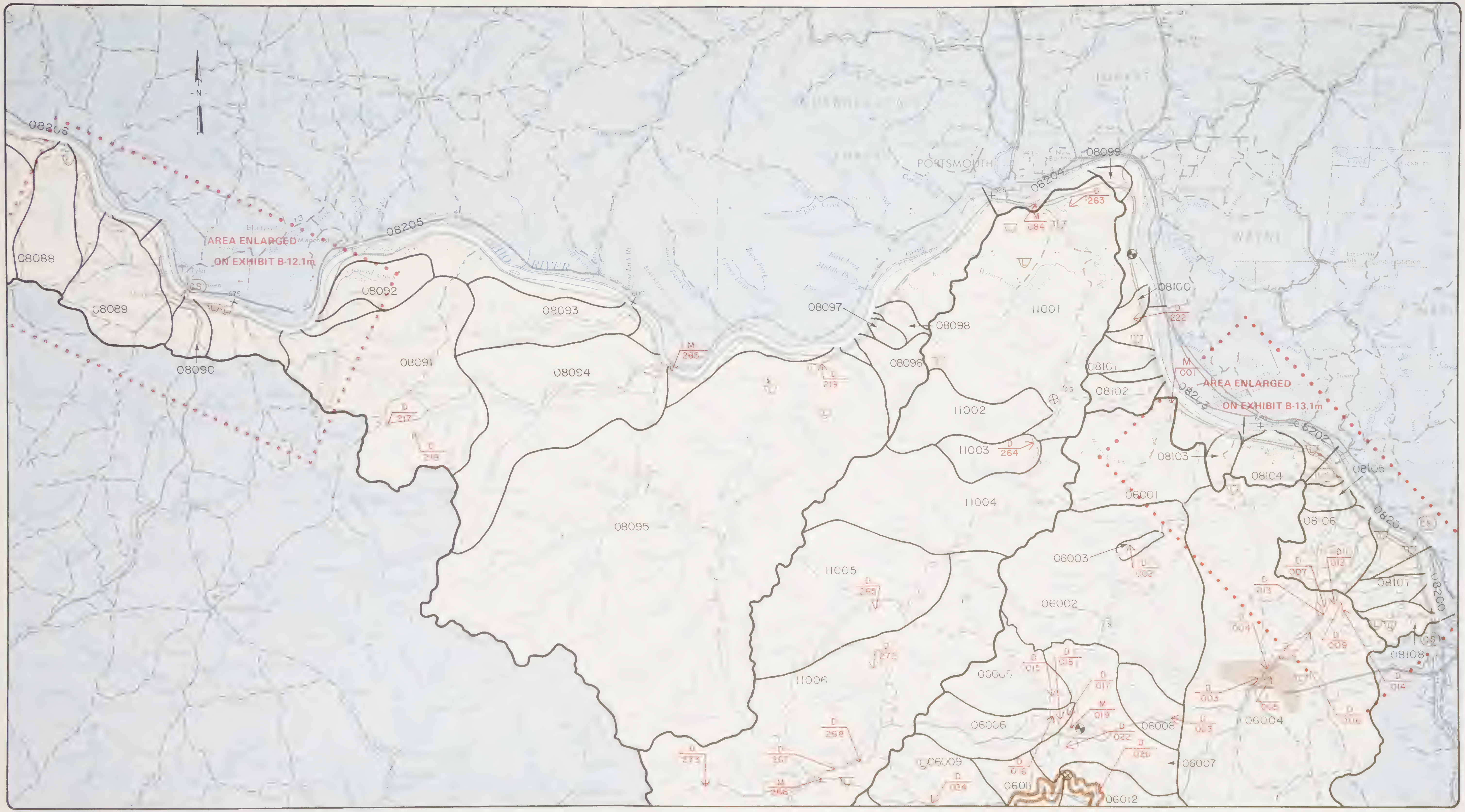
N
08206
AREA ENLARGED ON EXHIBIT B-12.1m
08205
OHIO RIVER
08088
08089
08090
08091
08092
08093
08094
08095
PORTSMOUTH
08204
08099
08097
08098
08096
11001
11002
11003
11004
11005
11006
08100
08101
08102
08103
08104
08105
08106
08107
08108
08203
08202
08201
08200
AREA ENLARGED ON EXHIBIT B-13.1m
06001
06002
06003
06004
06005
06006
06007
06008
06009
06011
06012
M 285
M 084
D 263
D 222
M 001
D 219
D 217
D 218
D 264
D 265
D 272
D 268
D 267
D 273
M 266
D 015
D 016
D 017
M 019
D 022
D 020
D 018
D 024
D 002
D 003
D 004
D 005
D 007
D 011
D 012
D 013
D 009
D 010
D 014
D 023
177
675
650
625
600

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-7.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
▼	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
▽	LANDFILLS DUMPS JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION

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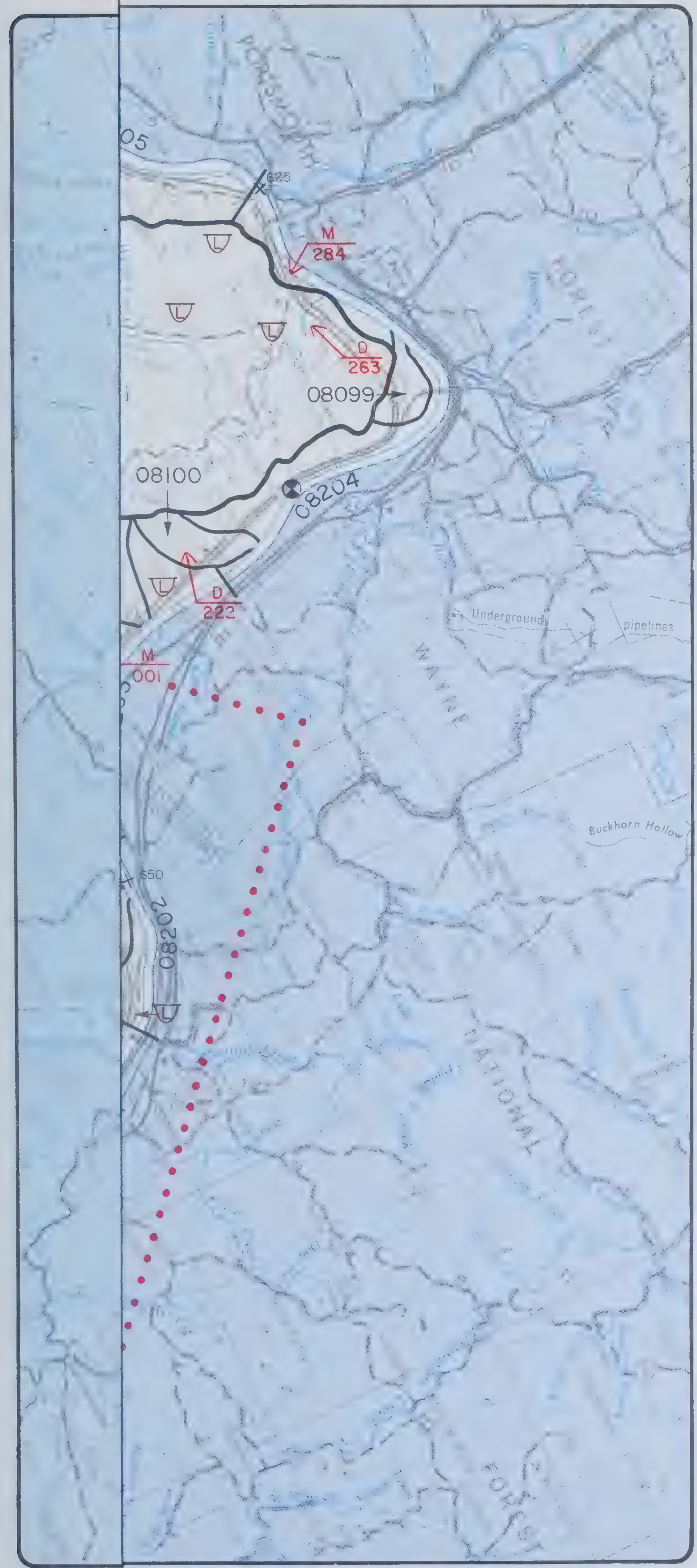
05
625
PORTSMOUTH
M
284
D
263
08099
08100
08204
D
222
M
001
Underground
pipelines
WAYNE
Buckhorn Hollow
650
08202
NATIONAL
FOREST

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-8.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+475 RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

● PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS) CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
L LANDFILLS, DUMPS, JUNK YARDS

5 0 5

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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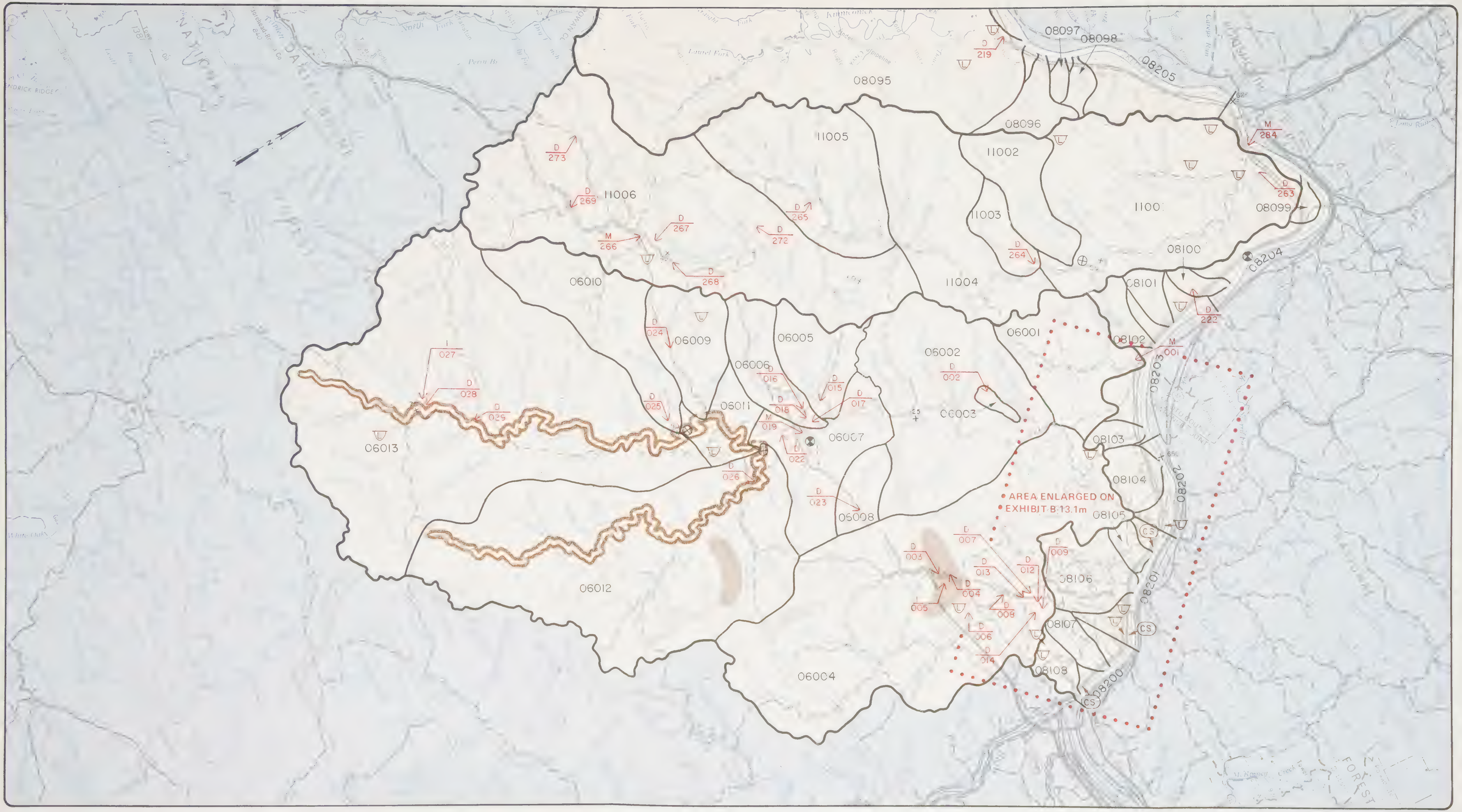
08095
08097
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08205
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11006
11003
1100
08099
08100
08204
06010
11004
08101
06009
06005
06001
08102
06002
06006
08203
06011
06003
06013
06007
08103
08104
08202
05008
08105
08106
08201
08107
08108
08200
06012
06004
D 219
D 273
D 269
D 265
M 266
D 267
D 272
D 268
D 264
M 284
D 263
D 222
M 001
D 024
I 027
D 028
D 029
D 025
D 016
D 015
D 017
D 018
M 019
D 002
D 022
D 026
D 023
D 007
D 003
D 009
D 013
D 012
D 004
D 005
D 008
D 006
D 014
CS
AREA ENLARGED ON EXHIBIT B.13.1m

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-8.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
RIVER MILES

DISCHARGERS

MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕ PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

5 0 5
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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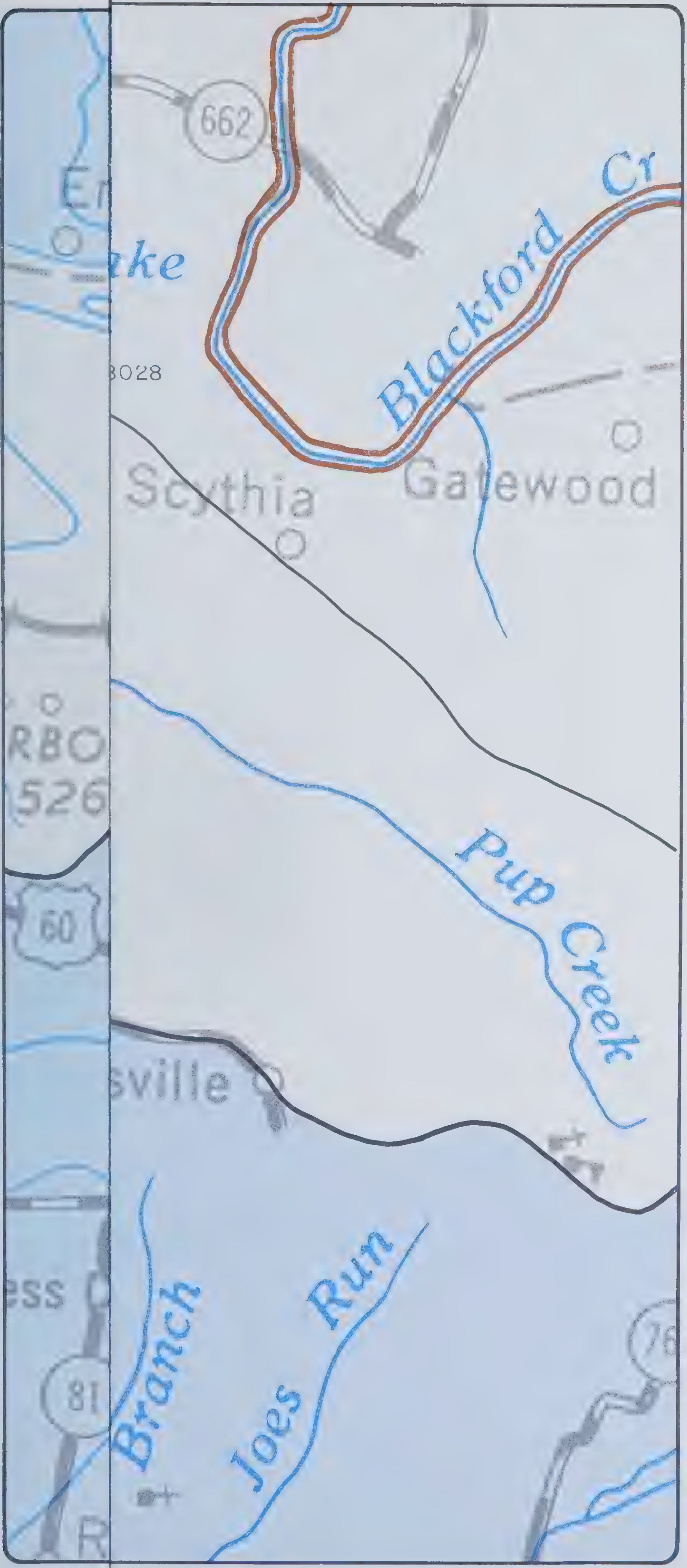

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-9.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+ 475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

1 0 1

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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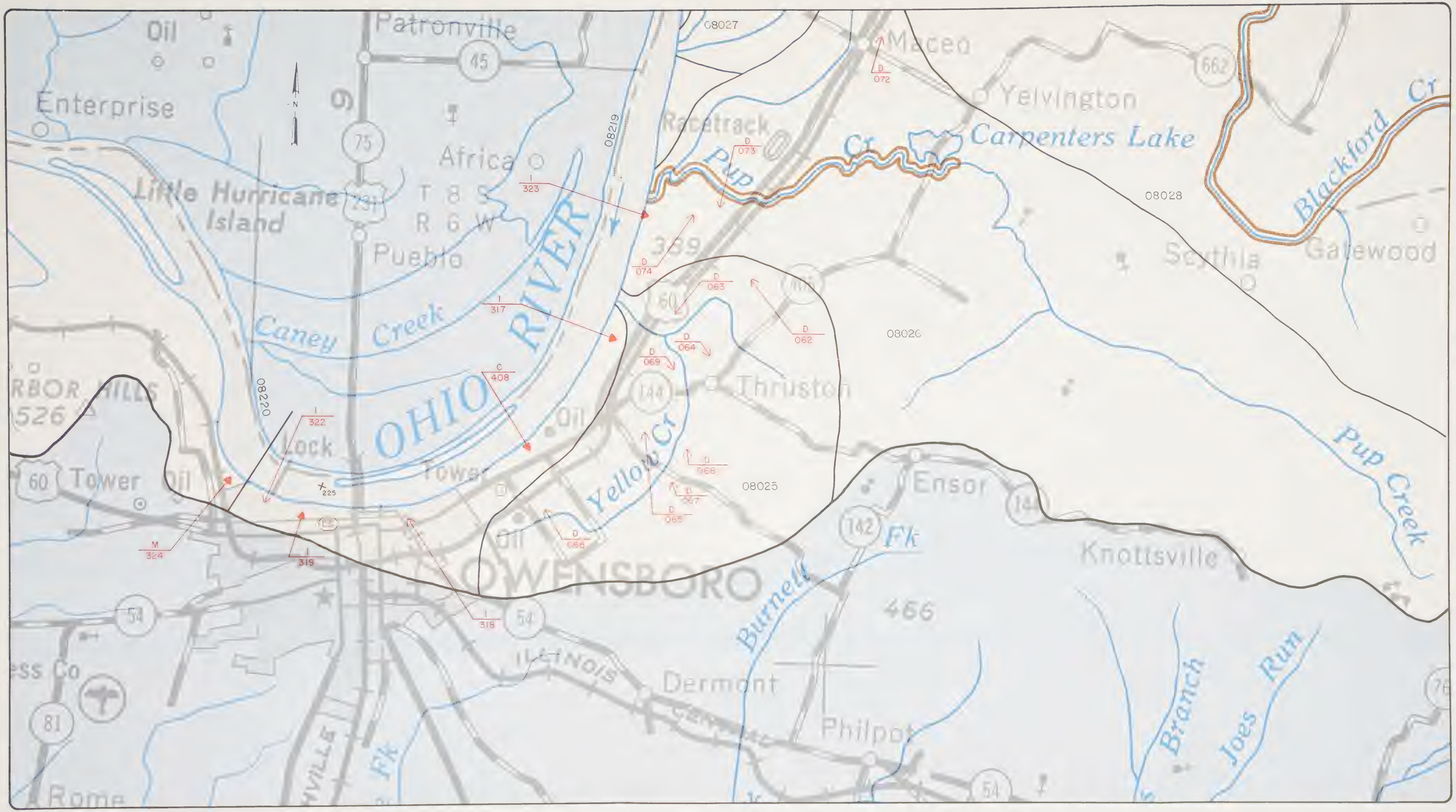
Oil
Patronville
45
08027
Maceo
D 072
Yelvington
662
Enterprise
75
Racetrack
D 073
Pup
Cr
Carpenters Lake
Blackford
Cr
08219
Africa
T 8 S
R 6 W
I 323
231
Little Hurricane Island
Pueblo
RIVER
389
D 074
08028
Scythia
Gatewood
D 063
60
D 062
08026
I 317
Caney Creek
D 064
D 069
C 408
144
Thruston
08220
OHIO
Oil
I 322
Lock
Yellow Cr
D 068
Pup Creek
RBOR HILLS
526
Ensor
D 327
D 065
08025
60
Tower
Oil
Tower
225
144
142
Fk
Knottsville
M 324
I 319
D 066
Oil
OWENSBORO
Burnett
466
54
I 318
54
ess Co
ILLINOIS
Dermont
CENTRAL
81
Philpot
Branch
Run
Joes
Fk
HVILLE
Rome
54
76

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-9.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
━━━	BASIN OUTLINE
08057	SEGMENT NUMBERS
───	SEGMENT BOUNDARIES
+	RIVER MILES
	DISCHARGERS
M ▼	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
▲	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
▲	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
▼	POWER PLANTS (COOLING WATER DISCHARGE ONLY)
	MONITORING STATIONS
◕	PRIMARY MONITORING STATIONS
✣	SECONDARY MONITORING STATIONS
	NONPOINT SOURCES
	CITIES WITH COMBINED SEWERS
⬭	ACID MINE DRAINAGE
	MINING OR QUARRYING
	LANDFILLS DUMPS JUNK YARDS

1 0 1

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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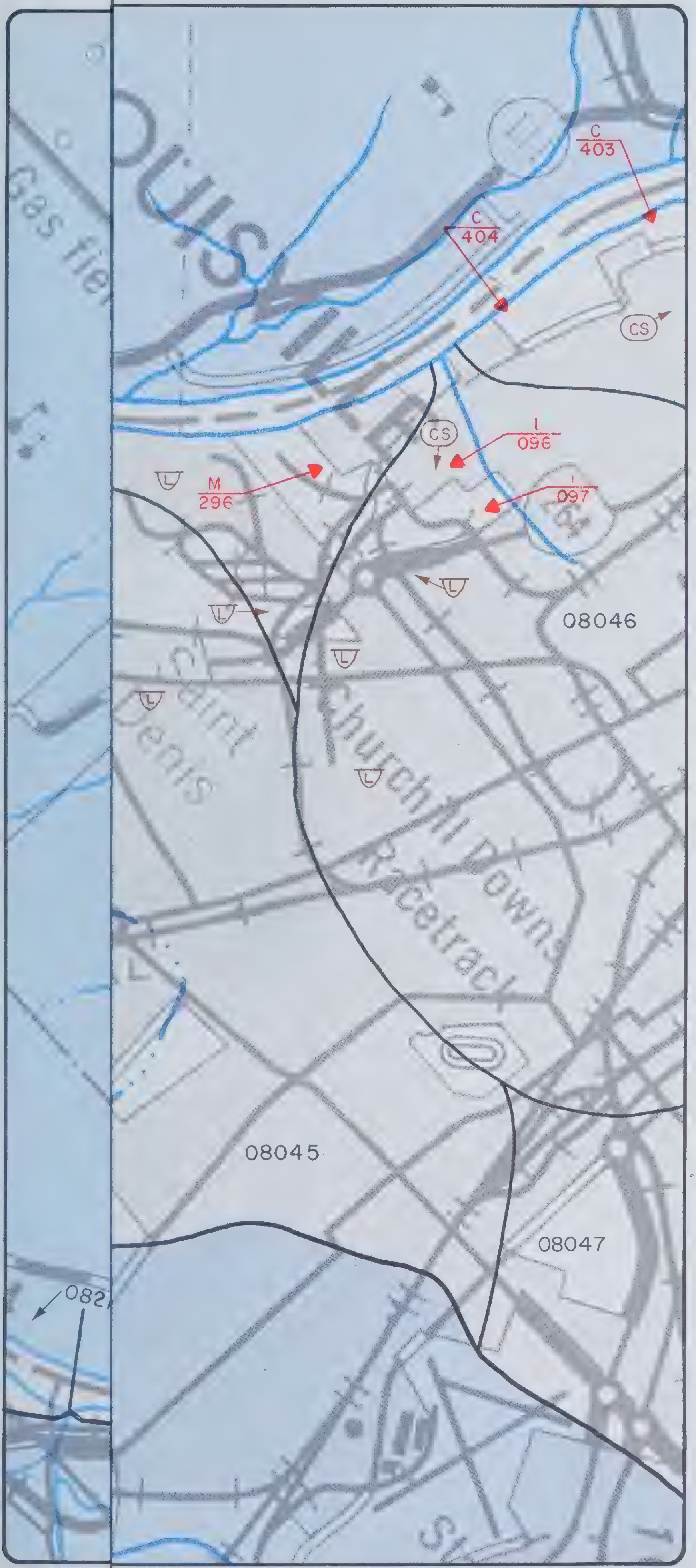
C
403
C
404
CS
CS
I
096
I
097
M
296
L
264
08046
08045
08047
082
Gas fie
Louisville
Saint Denis
Churchill Downs Racetrack

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-10.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

M 66	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

0

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

Prepared for Division of Water Quality

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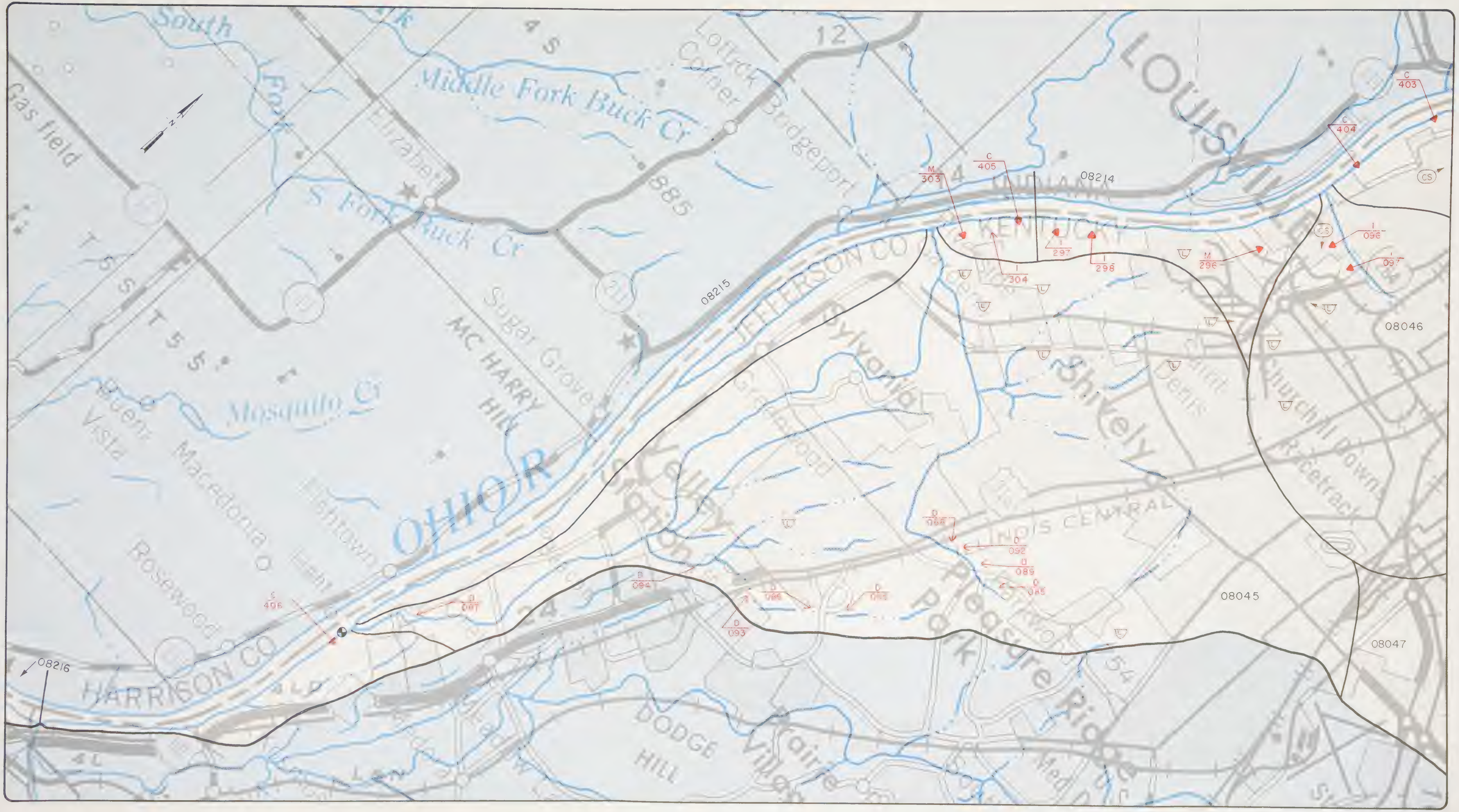
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Middle Fork Buck Cr
S Fork Buck Cr
Mosquito Cr
Gas field
Elizabeth
Locust Corner
Bridgeport
Sugar Grove
MC HARRY HILL
Buena Vista
Macedonia
Rosewood
Lightown
OHIO R
HARRISON CO
JEFFERSON CO
LOUISVILLE
INDIANA
KENTUCKY
Shively
Pleasure Ridge Park
Saint Denis
Churchill Downs Racetrack
Valley Station
Greenwood
Sylvania
Dodge Hill
Prairie Village
ILLINOIS CENTRAL
08214
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C 405
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I 096
I 097
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C 406
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D 094
D 086
D 093
D 083
D 088
D 092
D 089
D 085
885
12

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-10.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
RIVER MILES

DISCHARGERS

MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕ PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

0 1
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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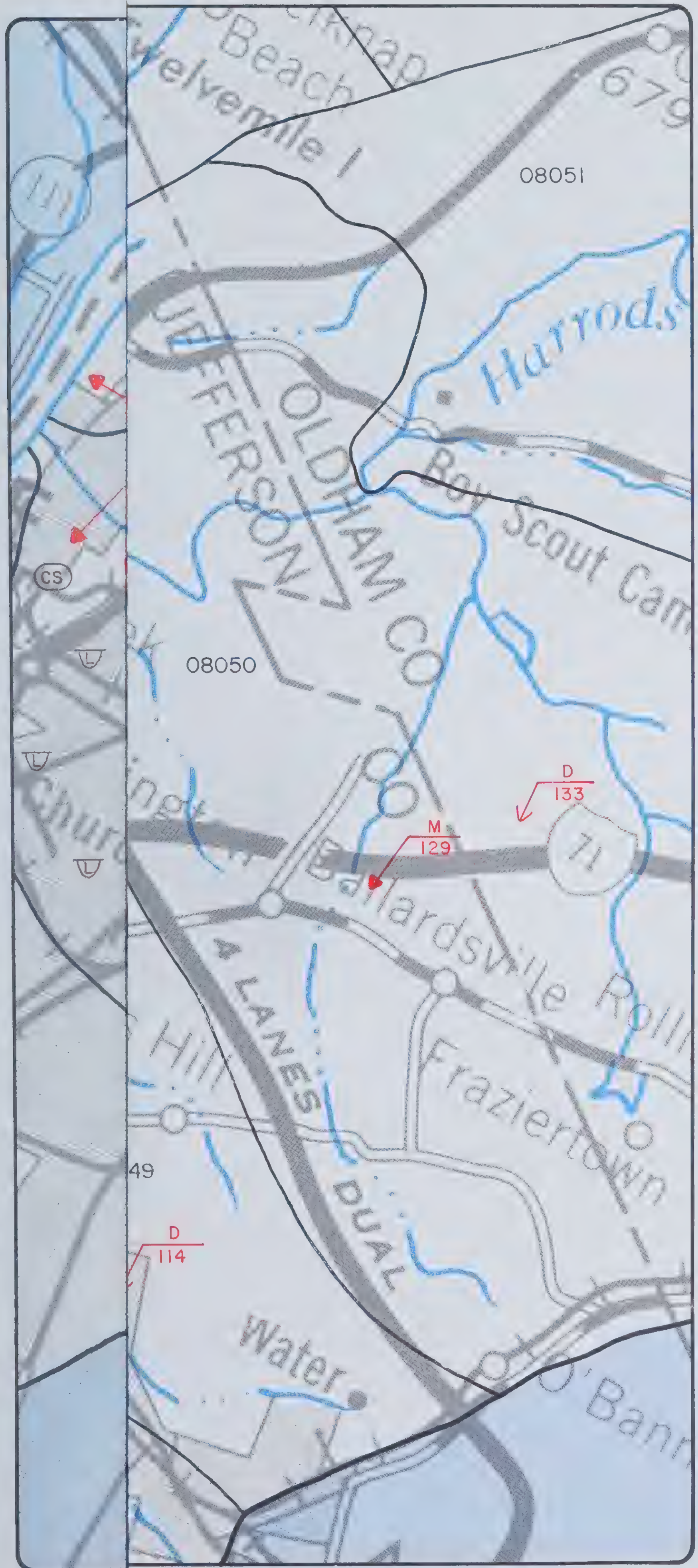
Beach
Twelvemile
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Harrods
Boy Scout Cam
JEFFERSON
OLDHAM CO
CS
08050
D 133
M 129
71
Ballardsville Roll
4 LANES
DUAL
Fraziertown
Hill
49
D 114
Water
O'Bann

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-11.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
+475 RIVER MILES

DISCHARGERS

M 166 MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177 PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391 MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148 PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037 MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294 PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401 POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◐ PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
L LANDFILLS, DUMPS, JUNK YARDS

1 0 1

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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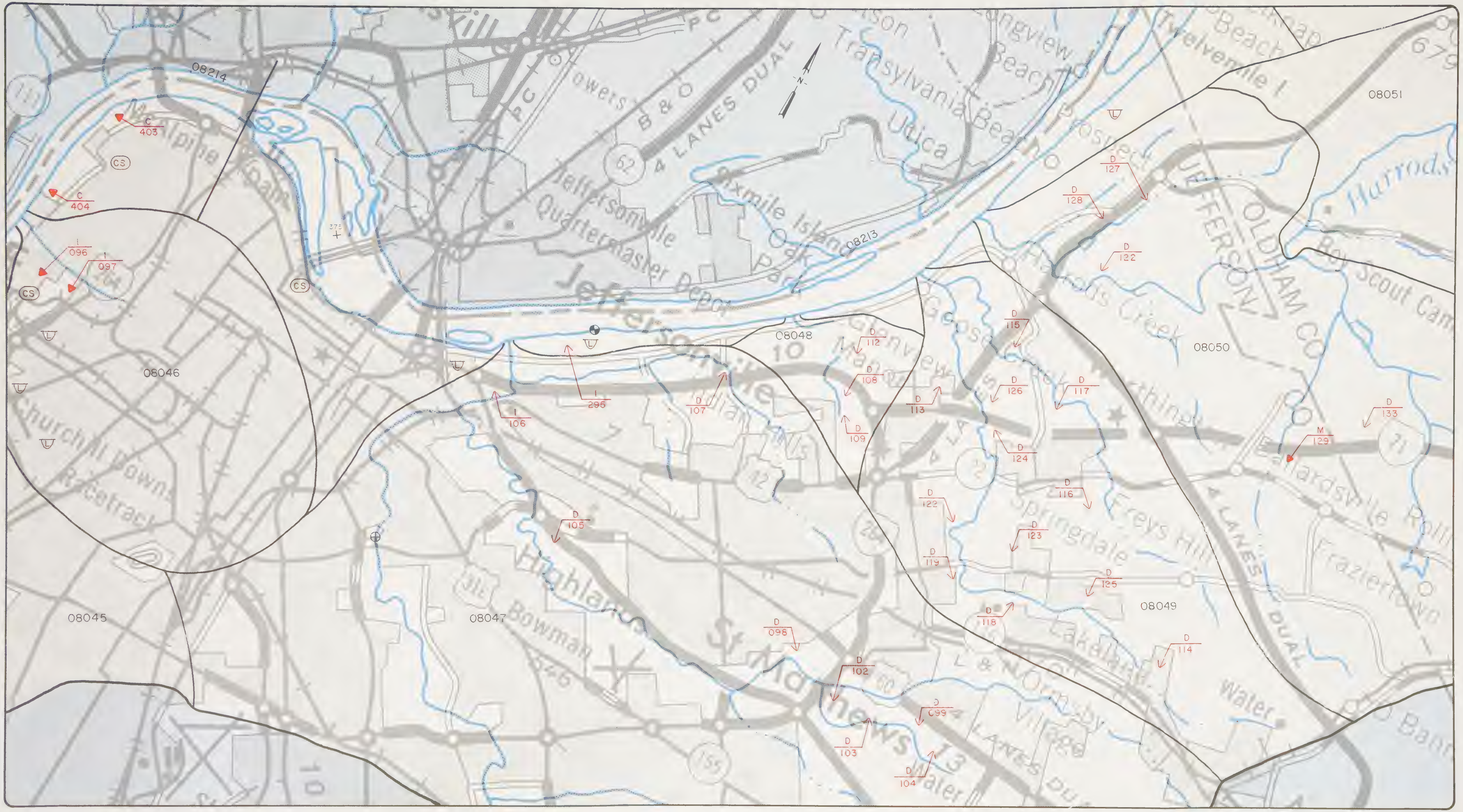
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D 114
D 105
D 098
D 102
D 099
D 103
D 104
Jeffersonville
Quartermaster Depot
Sixmile Island
Utica
Transylvania Beach
Longview Beach
Twelvemile I.
Harrods Creek
Jefferson
Oldham Co.
Boy Scout Camp
Churchill Downs Racetrack
Highlands
St. Matthews
Springdale
Lakeland
Ballardsville
Fraziertown
B & O
4 Lanes Dual
N

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-11.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
RIVER MILES

DISCHARGERS

MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

● PRIMARY MONITORING STATIONS
⊕ SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS DUMPS JUNK YARDS

1 0 1
GRAPHIC SCALE IN MILES

Base Data U.S. Geological Survey

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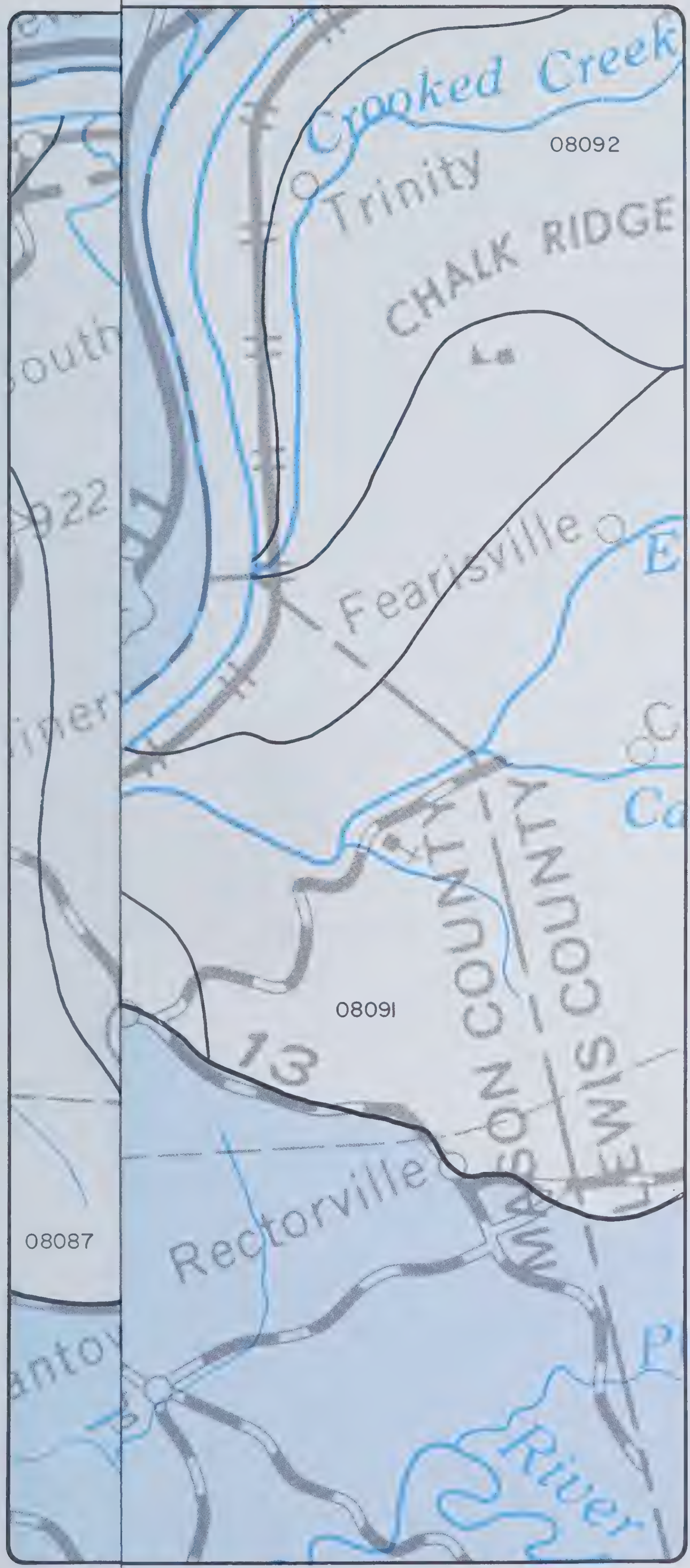
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08092
Trinity
CHALK RIDGE
Fearisville
E
C
Ca
08091
MASON COUNTY
LEWIS COUNTY
13
Rectorville
08087
River
P

OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-12.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
▬	BASIN OUTLINE
08057	SEGMENT NUMBERS
—	SEGMENT BOUNDARIES
+475	RIVER MILES

DISCHARGERS

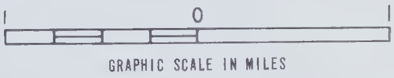
M 166 →	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
← M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391 →	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
← D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037 →	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
← I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401 →	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

(CS)	CITIES WITH COMBINED SEWERS
▭	ACID MINE DRAINAGE
▬	MINING OR QUARRYING
⊍	LANDFILLS, DUMPS, JUNK YARDS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GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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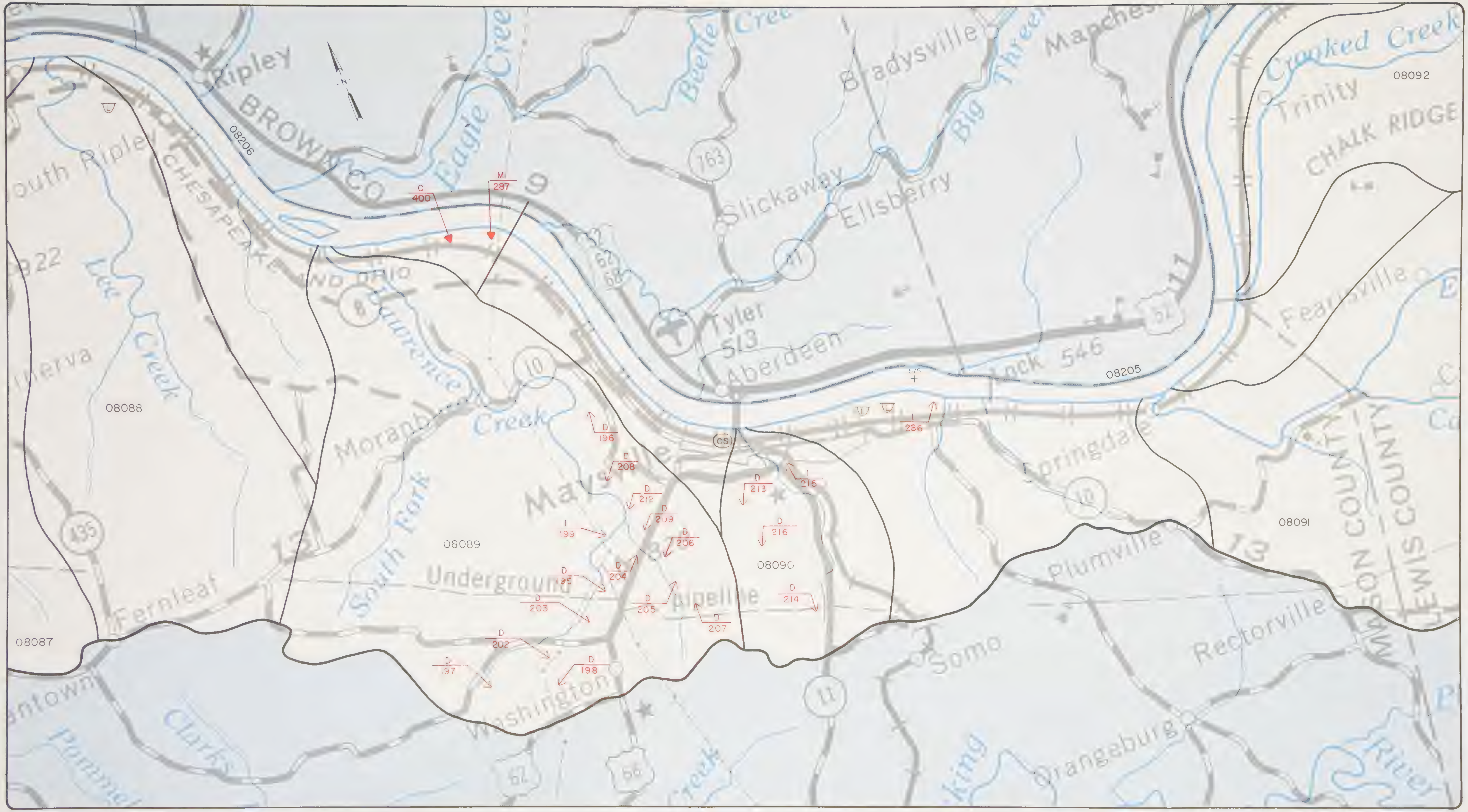
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CHESAPEAKE AND OHIO
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Minerva
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Eagle Creek
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Beetle Creek
Bradysville
Big Three Creek
Manchester
Slickaway
Ellsberry
Tyler
513
Aberdeen
Lock 546
08205
Crooked Creek
Trinity
CHALK RIDGE
08092
Fearisville
Lawrence Creek
Moranburg
Maysville
South Fork
08089
Underground
Pipeline
Fernleaf
08087
Washington
Clarks
08090
Springdale
Plumville
08091
Rectorville
Somo
Orangeburg
MASON COUNTY
LEWIS COUNTY
River
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OHIO RIVER BASIN
AND MINOR TRIBUTARIES

EXHIBIT B-12.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+ 475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
▽	LANDFILLS, DUMPS, JUNK YARDS

1 0 1

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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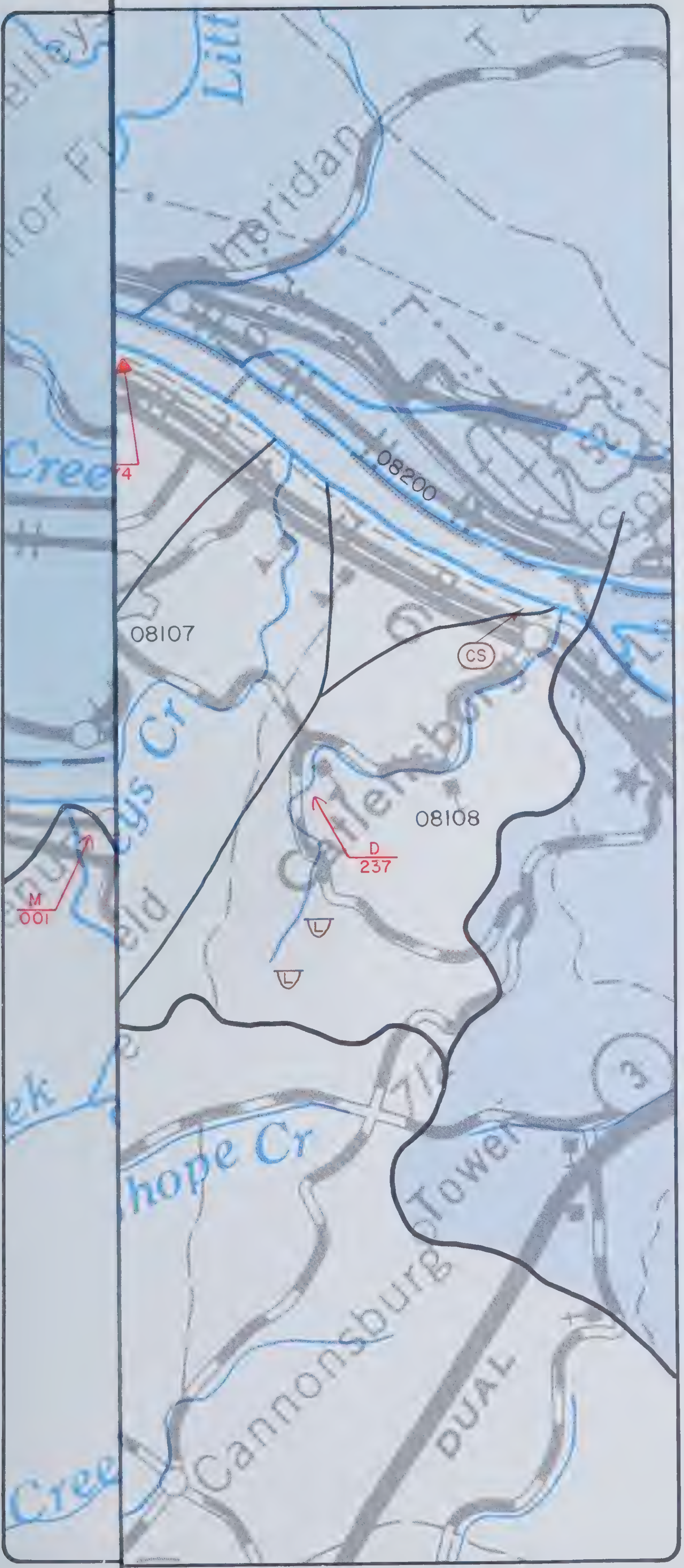

OHIO RIVER BASIN AND MINOR TRIBUTARIES

EXHIBIT B-13.1m

SEGMENT MAP

LEGEND

	COUNTY OUTLINES
	STREAMS
	BASIN OUTLINE
08057	SEGMENT NUMBERS
	SEGMENT BOUNDARIES
+ 475	RIVER MILES

DISCHARGERS

M 166	MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
M 177	PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
D 391	MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
D 148	PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
I 037	MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
I 294	PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
C 401	POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

◕	PRIMARY MONITORING STATIONS
⊕	SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS	CITIES WITH COMBINED SEWERS
	ACID MINE DRAINAGE
	MINING OR QUARRYING
L	LANDFILLS, DUMPS, JUNK YARDS

1 0 1

GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

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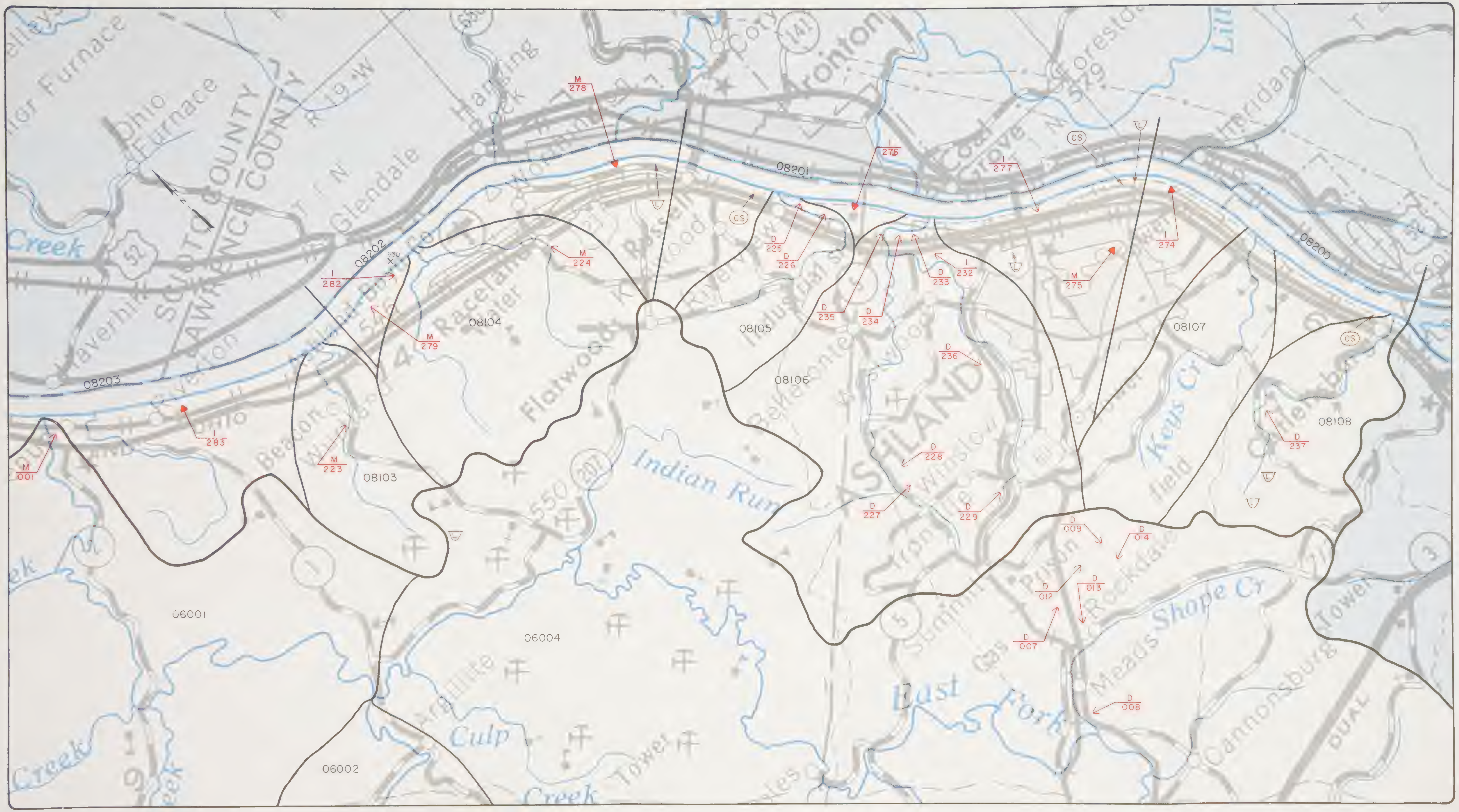

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I 283
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D 007
D 008
CS
Creek
Indian Run
Culp
East Fork
Meads Shope Cr
Keys Cr
Ironton
Russell
Flatwood
Raceland
Greenup
Ashland
Catlettsburg
Cannonsburg
SCIOTO COUNTY
LAWRENCE COUNTY
Ohio
Glendale
Hanging Rock
Coryville
Ohio Furnace
Haverhill

OHIO RIVER BASIN AND MINOR TRIBUTARIES

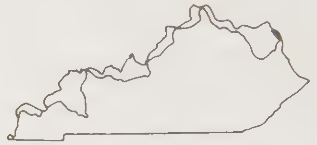

EXHIBIT B-13.1m

SEGMENT MAP

LEGEND

COUNTY OUTLINES
STREAMS
BASIN OUTLINE
08057 SEGMENT NUMBERS
SEGMENT BOUNDARIES
RIVER MILES

DISCHARGERS

MAJOR MUNICIPAL DISCHARGERS (OVER 1 MGD)
PRINCIPAL MUNICIPAL DISCHARGERS (LESS THAN 1 MGD)
MAJOR DOMESTIC DISCHARGERS (OVER 1 MGD)
PRINCIPAL DOMESTIC DISCHARGERS (LESS THAN 1 MGD)
MAJOR INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
PRINCIPAL INDUSTRIAL DISCHARGERS (LESS THAN 1 MGD)
POWER PLANTS (COOLING WATER DISCHARGE ONLY)

MONITORING STATIONS

PRIMARY MONITORING STATIONS
SECONDARY MONITORING STATIONS

NONPOINT SOURCES

CS CITIES WITH COMBINED SEWERS
ACID MINE DRAINAGE
MINING OR QUARRYING
LANDFILLS, DUMPS, JUNK YARDS

1 0 1
GRAPHIC SCALE IN MILES

Base Data: U.S. Geological Survey

KENTUCKY WATER QUALITY MANAGEMENT PLAN

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APPENDIX B

SEGMENT ANALYSES

INTRODUCTION

This appendix contains maps, tables and summary sheets for the one hundred seventy-three segments in the Ohio River Basin and is intended as an aid to better understanding of the water quality plan presented in the main report. The locations of the segments together with point and non-point source discharges, and receiving streams are shown on Exhibits B-1.1m through B-13.1m and supplements the Exhibit 4.2m in chapter IV. Basic planning data relating to population, housing, and land use by segments are presented in Exhibit B-1.2t. This table is compiled from population, housing and land use data presented respectively in Exhibits 3.5t, 3.6t, and 3.8t in chapter III. Segment employment data were not available and are not presented in Exhibit B-1.2t. County employment data, presented in Exhibit 3.7t in chapter III, could not be reliably disaggregated to obtain the segment employments.

Water quality-standards and violations at monitoring stations within segments are presented in Exhibit B-1.3t. This table is compiled from data taken from the EPA STORET files. Additional water quality data at stations within segments are presented in Exhibit A-1t in Appendix A.

Municipal, domestic, and industrial point source discharges, their locations, type of treatment, and effluent characteristics are presented in Exhibit B-1.4t. This table is compiled from data taken from the files of the Division of Water (Quality), Kentucky Department of Natural Resources and Environmental Protection. Additional data for municipal, domestic and industrial point source discharges are presented respectively in Exhibits 4.3t, 4.5t, and 4.7t in chapter IV. Non-point source discharges and the segments in which they occur are listed in Exhibit 4.9t in chapter IV.

Waste load allocations for BOD_5, SS, NH_3-N and DO for each point source discharge in each segment are presented in Exhibit B-1.5t. These waste load allocations are presented based on water quality modeling of the receiving streams. Also contained in this table are the municipal construction grant priorities. Additional data on compliance goals, and treatment needs for municipal, domestic and industrial wastewater discharges are presented in Exhibit 5.2t in chapter V. Corresponding to the waste loads allocation presented in Exhibit B-1.5t, the data for Total Maximum Daily Loads (TMDL), Maximum Theoretical Daily Loads (MTDL) and segment priority for each Water Quality Limited segment are presented in Exhibit 5.1t also in chapter V.

Municipal needs for treatment, and related costs and compliance goals are presented in Exhibit B-1.6t. Also contained in this table are the sludge disposal needs. Processes that can be used for achieving the treatment needs presented in Exhibit B-1.6t are shown on Exhibit 4.11t in chapter IV. Additional data on sludge disposal needs are contained in Exhibit 4.12t in chapter IV.

Segment Priority Data is presented in Exhibit B1.7t.

Segment analysis sheets are prepared to summarize all available data and information for each of the one hundred seventy-three segments and contain the following:

1. Segment classification
2. Segment priority
3. Segment location
4. Basic planning data for segment
5. Segment hydrology
6. Water quality-data in segment
7. Point source discharges in segment
8. Non-point source discharges in segment
9. Segment waste load allocation and priority
10. Municipal needs in segment
11. Alternative water quality management plans

Waste load allocations done for point source discharges in the Water Quality Limited segments are presented under 'Segment Waste Load allocation and priority'. Construction grant priorities are calculated for municipal discharges only and are also presented under the above heading.

Under 'alternative water quality management plans' references are made in some segments to treatment levels such as AS-1, 2, 3, 4 or TF-1, 2, 3, 4, or lagoon options for upgrading treatment level of point source discharges in those segments. These classifications correspond to those presented in chapter IV under 'Possible Upgrading Alternatives'.

Also included in Appendix B are three sets of graphs summarizing various characteristics for the Little Sandy River, the Tradewater River, and Tygarts Creek within the Ohio River Basin. These graphs presented in Exhibits B-14.1m through B-19.1m show the relationships various parameters have to the river mile index measured along the main stem of each tributary. The parameters included are:

1. Drainage Area in square miles
2. Elevation in feet above sea level
3. Total Flow in cfs
4. Travel Time in days
5. Dissolved oxygen Profile in mg/L
6. Population
7. Municipal cost million dollars
8. Cumulative assimilated capacity in lbs/day TOC
9. Treatment cost per capita in dollars/person

The intent of these graphs is to summarize conditions within a basin with emphasis toward the distribution of parameters along the main stem. These graphs are not intended to pinpoint problem areas or estimate a distribution of treatment costs.

Drainage area and elevation were obtained from USGS topographical maps of the area. Total flow, time of travel, cumulative assimilated capacity and DO profile were obtained from the UK/UL water quality model runs. Total flow includes wastewater flow, and cumulative assimilated capacity reflects the streams ability to absorb wastewater without violating the dissolved oxygen standard of 5 mg/L. The DO profile represents the conditions after remedial pollution control actions are taken.

The municipal cost curve is based on the total capital cost required for municipalities to meet water quality standards. These costs can also be found in Exhibit 5.2t. The treatment cost per capita is the municipal cost curve divided by the population curve for similar river mile index points.

Abrupt changes in the curves are normally due to the entrance of large tributaries to the main stem or due to a significant point source discharge.

EXHIBIT B1.2t BASIC PLANNING DATA

Segment 06001	Projection Years			
	1970	1975	1980	1995
Population	2795	2777	2759	2747
Rural	2795	2777	2759	2747
Farm	1382	1373	1234	856
Non-farm	1413	1404	1525	1891
Urban	--	--	--	--
Housing Units	1002	1002	1002	1002
Rural	1002	1002	1002	1002
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	31	31	31	31
Rural	31	31	31	31
Agriculture	10	10	10	10
Silviculture	21	21	21	21
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06002	Projection Years			
	1970	1975	1980	1995
Population	3445	3134	2823	1984
Rural	3445	3134	2823	1984
Farm	3445	3134	2823	1984
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	1235	1235	1235	1235
Rural	1235	1235	1235	1235
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	70	70	70	70
Rural	70	70	70	70
Agriculture	24	24	24	24
Silviculture	46	46	46	46
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06003	Projection Years			
	1970	1975	1980	1995
Population	84	81	78	72
Rural	84	81	78	72
Farm	84	81	78	72
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	30	30	30	30
Rural	30	30	30	30
Urban	--	--	--	-
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	2	2	2	2
Agriculture	1	1	1	1
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06004	Projection Years			
	1970	1975	1980	1995
Population	4070	4088	4106	4195
Rural	4070	4088	4106	4195
Farm	4070	4088	4106	4195
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	1548	1554	1561	1595
Rural	1548	1554	1561	1595
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	157	157	157	157
Rural	155	155	154	152
Agriculture	54	54	53	51
Silviculture	95	95	94	91
Mining	6	6	7	10
Urban	2	2	3	5
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06005	Projection Years			
	1970	1975	1980	1995
Population	546	527	508	465
Rural	546	527	508	465
Farm	546	527	508	465
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	242	242	242	242
Rural	242	242	242	242
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	13	13	13	13
Rural	13	13	13	13
Agriculture	4	4	4	4
Silviculture	9	9	9	9
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06006	Projection Years			
	1970	1975	1980	1995
Population	670	648	626	573
Rural	670	648	626	573
Farm	670	648	626	573
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	296	296	296	296
Rural	296	296	296	296
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	16	16	16	16
Rural	15	15	15	15
Agriculture	4	4	4	4
Silviculture	11	11	11	11
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06007	Projection Years			
	1970	1975	1980	1995
Population	3239	3503	3767	4331
Rural	3239	3503	1017	931
Farm	974	1053	1017	931
Non-farm	2265	2450	--	--
Urban	--	--	2750	3400
Housing Units	1433	1550	1669	1916
Rural	1433	1550	450	450
Urban	--	--	1219	1466
Employment				
Manufacturing				
Non-manufacturing				
Land Use	28	28	28	28
Rural	25	25	23	19
Agriculture	7	7	7	6
Silviculture	18	18	16	13
Mining	--	--	--	--
Urban	3	3	5	9
Construction	--	--	2	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06008	Projection Years			
	1970	1975	1980	1995
Population	462	446	430	394
Rural	462	446	430	394
Farm	462	446	430	394
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	204	204	204	204
Rural	204	204	204	204
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	11	11	11	11
Agriculture	3	3	3	3
Silviculture	8	8	8	8
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06009	Projection Years 1970	1975	1980	1995
Population	754	729	704	644
Rural	754	729	704	644
Farm	754	729	704	644
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	334	334	334	334
Rural	334	334	334	334
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	18	18	18	18
Agriculture	5	5	5	5
Silviculture	13	13	13	13
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06010	Projection Years			
	1970	1975	1980	1995
Population	1107	1079	1051	977
Rural	1107	1079	1051	977
Farm	1107	1079	1051	977
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	510	510	510	510
Rural	510	510	510	510
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	33	33	33	33
Rural	32	32	32	32
Agriculture	9	9	9	9
Silviculture	23	23	23	23
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06011	Projection Years			
	1970	1975	1980	1995
Population	462	446	430	394
Rural	462	446	430	394
Farm	462	446	430	394
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	204	204	204	204
Rural	204	204	204	204
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	11	11	11	10
Agriculture	3	3	3	3
Silviculture	8	8	8	7
Mining	--	--	--	--
Urban	--	--	--	1
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06012	Projection Years			
	1970	1975	1980	1995
Population	4165	4073	3981	3741
Rural	4165	4073	3981	3741
Farm	4165	4073	3981	3741
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	1919	1919	1919	1919
Rural	1919	1919	1919	1919
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	137	137	137	137
Rural	135	135	135	133
Agriculture	40	40	40	38
Silviculture	89	89	88	85
Mining	6	6	7	10
Urban	2	2	2	4
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 06013	Projection Years			
	1970	1975	1980	1995
Population	5211	5233	5255	5242
Rural	5211	5233	5255	5242
Farm	4971	4923	4875	4672
Non-farm	240	310	380	570
Urban	--	--	--	--
Housing Units	1923	1931	1939	1939
Rural	1923	1931	1939	1939
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	194	194	194	194
Rural	192	192	190	186
Agriculture	71	71	70	69
Silviculture	121	121	120	117
Mining	--	--	--	--
Urban	2	2	4	8
Construction	--	--	2	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08001	Projection Years			
	1970	1975	1980	1995
Population	2059	2057	2055	2077
Rural	2059	2057	2055	2077
Farm	975	974	938	850
Non-farm	1084	1083	1117	1227
Urban	--	--	--	--
Housing Units	786	786	786	793
Rural	786	786	786	793
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	60	60	60	60
Rural	59	59	59	59
Agriculture	42	42	42	42
Silviculture	17	17	17	17
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08002	Projection Years			
	1970	1975	1980	1995
Population	1202	1175	1148	1081
Rural	1202	1175	1148	1081
Farm	759	742	715	648
Non-farm	443	433	433	433
Urban	--	--	--	--
Housing Units	459	459	459	459
Rural	459	459	459	459
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	46	46	46	46
Rural	45	45	45	45
Agriculture	32	32	32	32
Silviculture	13	13	13	13
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08003	Projection Years			
	1970	1975	1980	1995
Population	703	672	641	593
Rural	703	672	641	593
Farm	703	672	641	593
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	261	261	261	261
Rural	261	261	261	261
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	14	14	14	14
Agriculture	9	9	9	9
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08004	1970	1975	1980	1995
	Projection Years			
Population	1899	1811	1723	1603
Rural	1899	1811	1723	1603
Farm	1899	1811	1723	1603
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	688	688	688	688
Rural	688	688	688	688
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	19	19	19	19
Rural	19	19	19	19
Agriculture	13	13	13	13
Silviculture	6	6	6	6
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08005	Projection Years 1970	 1975	 1980	 1995
Population	1864	1778	1692	1574
Rural	1864	1778	1692	1574
Farm	1864	1778	1692	1574
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	675	675	675	675
Rural	675	675	675	675
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	17	17	17	17
Rural	11	11	11	11
Agriculture	7	7	7	7
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	6	6	6	6
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08006	Projection Years			
	1970	1975	1980	1995
Population	986	941	896	833
Rural	986	941	896	833
Farm	986	941	896	833
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	357	357	357	357
Rural	357	357	357	357
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	9	9	9	9
Rural	5	5	5	4
Agriculture	3	3	3	3
Silviculture	2	2	2	1
Mining	--	--	--	--
Urban	4	4	4	5
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08906	Projection Years 1970	1975	1980	1995
Population	110	105	100	93
Rural	110	105	100	93
Farm	110	105	100	93
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	40	40	40	40
Rural	40	40	40	40
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	1	1	1	1
Rural	1	1	1	--
Agriculture	1	1	1	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	--	--	--	1
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08007	Projection Years			
	1970	1975	1980	1995
Population	7568	7217	6866	6389
Rural	7568	7217	6866	6389
Farm	7568	7217	6866	6389
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	2742	2742	2742	2742
Rural	2742	2742	2742	2742
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	69	69	69	69
Rural	63	63	63	61
Agriculture	44	44	44	42
Silviculture	19	19	19	19
Mining	--	--	--	--
Urban	6	6	6	8
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08008	1970	1975	1980	1995
Population	5524	5266	5008	4662
Rural	5524	5266	5008	4662
Farm	5524	5266	5008	4662
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	2001	2001	2001	2001
Rural	2001	2001	2001	2001
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	23	23	23	23
Rural	15	15	15	15
Agriculture	10	10	10	10
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	8	8	8	8
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08009	Projection Years			
	1970	1975	1980	1995
Population	914	947	980	1123
Rural	914	947	980	1123
Farm	914	947	980	1123
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	358	371	384	440
Rural	358	371	384	440
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	41	41	41	41
Rural	41	41	41	41
Agriculture	27	27	27	27
Silviculture	14	14	14	14
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08010	Projection Years 1970	1975	1980	1995
Population	223	231	239	274
Rural	223	231	239	274
Farm	223	231	239	274
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	87	91	94	107
Rural	87	91	94	107
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	10	10	10	10
Agriculture	6	6	6	6
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08011	Projection Years			
	1970	1975	1980	1995
Population	1366	1402	1438	1602
Rural	1366	1402	1438	1602
Farm	1366	1402	1438	1602
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	538	552	566	631
Rural	538	552	566	631
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	74	74	74	74
Rural	74	74	74	74
Agriculture	48	48	48	48
Silviculture	26	26	26	26
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08012	Projection Years			
	1970	1975	1980	1995
Population	681	690	699	745
Rural	681	690	699	745
Farm	681	690	699	745
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	270	274	277	296
Rural	270	274	277	296
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	46	46	46	46
Rural	46	46	46	46
Agriculture	30	30	30	30
Silviculture	16	16	16	16
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08013	Projection Years 1970	1975	1980	1995
Population	3811	4044	4277	5400
Rural	792	840	851	907
Farm	792	840	851	907
Non-farm	--	--	--	--
Urban	3019	3204	3426	4493
Housing Units	1512	1605	1697	2143
Rural	314	333	337	360
Urban	1198	1271	1360	1783
Employment				
Manufacturing				
Non-manufacturing				
Land Use	59	59	59	59
Rural	56	56	56	56
Agriculture	36	36	36	36
Silviculture	20	20	20	20
Mining	--	--	--	--
Urban	3	3	3	3
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08014	Projection Years 1970	1975	1980	1995
Population	163	165	167	178
Rural	163	165	167	178
Farm	163	165	167	178
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	65	65	66	71
Rural	65	65	66	71
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	11	11	11	11
Agriculture	7	7	7	7
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08015	Projection Years			
	1970	1975	1980	1995
Population	621	498	375	230
Rural	621	498	375	230
Farm	621	498	375	230
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	191	191	191	191
Rural	191	191	191	191
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	28	28	28	28
Rural	28	28	28	28
Agriculture	23	23	23	23
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08915	Projection Years			
	1970	1975	1980	1995
Population	23	18	13	8
Rural	23	18	13	8
Farm	23	18	13	8
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	7	7	7	7
Rural	7	7	7	7
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	1	1	1	1
Rural	1	1	1	1
Agriculture	1	1	1	1
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08016	Projection Years			
	1970	1975	1980	1995
Population	1577	1264	951	582
Rural	1577	1264	951	582
Farm	1577	1264	951	582
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	485	485	485	485
Rural	485	485	485	485
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	71	71	71	71
Rural	69	69	69	69
Agriculture	56	56	55	54
Silviculture	11	11	11	11
Mining	2	2	3	4
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08017	Projection Years			
	1970	1975	1980	1995
Population	222	178	134	82
Rural	222	178	134	82
Farm	222	178	134	82
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	68	68	68	68
Rural	68	68	68	68
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	10	10	10	10
Agriculture	8	8	8	8
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08018	Projection Years			
	1970	1975	1980	1995
Population	4991	6248	2005*	2356*
Rural	1428	1788	2005	2356
Farm	270	338	255	156
Non-farm	1158	1450	1750	2200
Urban	3563	4460	--	--
Housing Units	1536	1922	2248	2879
Rural	439	550	617	725
Urban	1097	1372	1631	2154
Employment				
Manufacturing				
Non-manufacturing				
Land Use	26	26	26	26
Rural	21	21	20	17
Agriculture	18	18	17	15
Silviculture	3	3	3	2
Mining	--	--	--	--
Urban	5	5	6	9
Construction	--	--	1	3

*Sewered population transferred to segment 08021 due to regionalization

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08019	Projection Years 1970	1975	1980	1995
Population	143	141	139	156
Rural	143	141	139	156
Farm	143	141	139	156
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	46	46	46	50
Rural	46	46	46	50
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	5	5	5	5
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08020	Projection Years			
	1970	1975	1980	1995
Population	165	159	153	164
Rural	165	159	153	164
Farm	165	159	153	164
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	53	53	53	53
Rural	53	53	53	53
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	7	7	7	7
Agriculture	5	5	5	5
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08021	Projection Years			
	1970	1975	1980	1995
Population	6199	7649	13008*	15878*
Rural	6199	7649	7708	5578
Farm	3965	4893	4536	4433
Non-farm	2234	2756	3172	1145
Urban	--	--	5300	10300
Housing Units	2000	2467	2486	2864
Rural	2000	2467	2486	1799
Urban	--	--	--	1065
Employment				
Manufacturing				
Non-manufacturing				
Land Use	238	238	238	238
Rural	234	234	234	233
Agriculture	184	184	183	182
Silviculture	48	48	48	47
Mining	2	2	3	4
Urban	4	4	4	5
Construction	--	--	--	1

*Includes sewered population transferred from segment 08018 due to regionalization

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08022	Projection Years			
	1970	1975	1980	1995
Population	120	123	126	148
Rural	120	123	126	148
Farm	120	123	126	148
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	41	42	43	50
Rural	41	42	43	50
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	5	5	5	5
Agriculture	4	4	4	4
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08023	Projection Years			
	1970	1975	1980	1995
Population	2603	2657	2711	3186
Rural	2603	2657	2711	3186
Farm	2603	2657	2711	3186
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	882	901	919	1080
Rural	882	901	919	1080
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	114	114	114	114
Rural	102	102	102	102
Agriculture	79	79	79	79
Silviculture	23	23	23	23
Mining	--	--	--	--
Urban	12	12	12	12
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08024	Projection Years			
	1970	1975	1980	1995
Population	226	242	258	316
Rural	226	242	258	316
Farm	226	242	258	316
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	72	77	82	101
Rural	72	77	82	101
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	5	5	5	5
Agriculture	4	4	4	4
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08025	Projection Years			
	1970	1975	1980	1995
Population	1168	1251	1334	1634
Rural	1168	1251	1334	1634
Farm	1168	1251	1334	1634
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	372	398	425	520
Rural	372	398	425	520
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	14	14	13	9
Agriculture	11	11	10	7
Silviculture	3	3	3	2
Mining	--	--	--	--
Urban	--	--	1	5
Construction	--	--	1	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08026	Projection Years			
	1970	1975	1980	1995
Population	1668	1787	1906	2335
Rural	1668	1787	1906	2335
Farm	1668	1787	1906	2335
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	531	569	607	744
Rural	531	569	607	744
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	37	37	37	37
Rural	37	37	37	36
Agriculture	29	29	29	28
Silviculture	8	8	8	8
Mining	--	--	--	--
Urban	--	--	--	1
Construction	--	--	--	1

EXHIBIT B1.2t BASIC PLANNING DATA

Segment 08027	Projection Years			
	1970	1975	1980	1995
Population	226	242	258	316
Rural	226	242	258	316
Farm	226	242	258	316
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	72	77	82	101
Rural	72	77	82	101
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	5	5	5	5
Agriculture	4	4	4	4
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08028	Projection Years			
	1970	1975	1980	1995
Population	2930	3129	3328	5480
Rural	2930	3129	3328	5480
Farm	2930	3129	3328	5480
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	954	1019	1084	1785
Rural	954	1019	1084	1785
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	114	114	114	114
Rural	114	114	112	110
Agriculture	67	67	66	63
Silviculture	44	44	42	41
Mining	3	3	4	6
Urban	--	--	2	4
Construction	--	--	2	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08928	Projection Years			
	1970	1975	1980	1995
Population	33	36	39	83
Rural	33	36	39	83
Farm	33	36	39	83
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	11	12	13	28
Rural	11	12	13	28
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	2	2	2	--
Agriculture	1	1	1	--
Silviculture	1	1	1	--
Mining	--	--	--	--
Urban	--	--	--	2
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08029	Projection Years			
	1970	1975	1980	1995
Population	311	329	347	745
Rural	311	329	347	745
Farm	311	329	347	745
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	104	110	116	249
Rural	104	110	116	249
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	15	15	14	10
Agriculture	7	7	7	4
Silviculture	7	7	6	4
Mining	1	1	1	2
Urban	3	3	4	8
Construction	--	--	1	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08030	Projection Years			
	1970	1975	1980	1995
Population	309	328	347	745
Rural	309	328	347	745
Farm	309	328	347	745
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	103	110	116	249
Rural	103	110	116	249
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	17	17	16	14
Agriculture	9	9	8	7
Silviculture	8	8	8	7
Mining	--	--	--	--
Urban	1	1	2	4
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08031	Projection Years			
	1970	1975	1980	1995
Population	188	200	212	455
Rural	188	200	212	455
Farm	188	200	212	455
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	63	67	71	152
Rural	63	67	71	152
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	10	10	10	8
Agriculture	5	5	5	4
Silviculture	5	5	5	4
Mining	--	--	--	--
Urban	1	1	1	3
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08032	Projection Years			
	1970	1975	1980	1995
Population	1599	1648	1697	1875
Rural	1599	1648	1697	1875
Farm	1599	1648	1697	1875
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	571	589	606	670
Rural	571	589	606	670
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	91	91	91	91
Rural	90	90	90	90
Agriculture	46	46	46	46
Silviculture	44	44	44	44
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08033	Projection Years			
	1970	1975	1980	1995
Population	89	91	93	97
Rural	89	91	93	97
Farm	89	91	93	97
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	34	35	36	37
Rural	34	35	36	37
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	5	5	5	3
Agriculture	3	3	3	2
Silviculture	2	2	2	1
Mining	--	--	--	--
Urban	--	--	--	2
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08034	Projection Years			
	1970	1975	1980	1995
Population	106	109	112	116
Rural	106	109	112	116
Farm	106	109	112	116
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	41	42	43	44
Rural	41	42	43	44
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	5	3
Agriculture	3	3	3	2
Silviculture	3	3	2	1
Mining	--	--	--	--
Urban	--	--	1	3
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08035	Projection Years			
	1970	1975	1980	1995
Population	4341	4606	4871	5894
Rural	4341	4606	4871	3110
Farm	2713	2879	2964	3110
Non-farm	1628	1727	1907	--
Urban	--	--	--	2784
Housing Units	1670	1772	1873	2267
Rural	1670	1772	1873	1196
Urban	--	--	--	1071
Employment				
Manufacturing				
Non-manufacturing				
Land Use	156	156	156	156
Rural	154	154	154	153
Agriculture	93	93	93	93
Silviculture	61	61	61	60
Mining	--	--	--	--
Urban	2	2	2	3
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08036	Projection Years			
	1970	1975	1980	1995
Population	124	127	130	136
Rural	124	127	130	136
Farm	124	127	130	136
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	48	49	50	52
Rural	48	49	50	52
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	7	7	7	7
Agriculture	4	4	4	4
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08037	Projection Years			
	1970	1975	1980	1995
Population	475	471	467	439
Rural	475	471	467	439
Farm	475	471	467	439
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	183	183	183	183
Rural	183	183	183	183
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	22	22	22	22
Rural	22	22	22	22
Agriculture	11	11	11	11
Silviculture	11	11	11	11
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08038	Projection Years			
	1970	1975	1980	1995
Population	325	295	265	162
Rural	325	295	265	162
Farm	325	295	265	162
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	100	100	100	100
Rural	100	100	100	100
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	7	7	7	7
Agriculture	3	3	3	3
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08039	Projection Years			
	1970	1975	1980	1995
Population	408	374	340	225
Rural	408	374	340	225
Farm	408	374	340	225
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	126	126	126	126
Rural	126	126	126	126
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	10	10	10	10
Agriculture	5	5	5	5
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08040	Projection Years			
	1970	1975	1980	1995
Population	279	253	227	139
Rural	279	253	227	139
Farm	279	253	227	139
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	86	86	86	86
Rural	86	86	86	86
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	5	5	5	5
Agriculture	2	2	2	2
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08041	Projection Years			
	1970	1975	1980	1995
Population	1535	1393	1251	766
Rural	1535	1393	1251	766
Farm	1535	1393	1251	766
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	472	472	472	472
Rural	472	472	472	472
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	33	33	33	33
Rural	32	32	32	32
Agriculture	16	16	16	16
Silviculture	16	16	16	16
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

	Projection Years			
Segment 08042	1970	1975	1980	1995
Population	5545	5493	5441	5372
Rural	5545	5493	5441	5372
Farm	4099	4061	3877	3173
Non-farm	1446	1432	1564	2199
Urban	--	--	--	--
Housing Units	1892	1892	1892	1892
Rural	1892	1892	1892	1892
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	115	115	115	115
Rural	112	112	112	111
Agriculture	67	67	67	67
Silviculture	45	45	45	44
Mining	--	--	--	--
Urban	3	3	3	4
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08043	Projection Years			
	1970	1975	1980	1995
Population	4381	5487	6593	9866
Rural	2185	2737	2493	1656
Farm	2021	2532	2274	1392
Non-farm	164	205	219	264
Urban	2196	2750	4100	8210
Housing Units	1348	1688	2029	3036
Rural	672	842	842	842
Urban	676	846	1187	2194
Employment				
Manufacturing				
Non-manufacturing				
Land Use	65	65	65	65
Rural	63	63	62	60
Agriculture	47	47	46	45
Silviculture	16	16	16	15
Mining	--	--	--	--
Urban	2	2	3	5
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08044	Projection Years			
	1970	1975	1980	1995
Population	8651	8872	9093	9573
Rural	5447	5586	5509	5108
Farm	5447	5586	5509	5108
Non-farm	--	--	--	--
Urban	3204	3286	3584	4465
Housing Units	2301	2360	2418	2546
Rural	1449	1486	1486	1486
Urban	852	874	932	1060
Employment				
Manufacturing				
Non-manufacturing				
Land Use	113	113	113	113
Rural	106*	106*	106*	106*
Agriculture	57	57	57	57
Silviculture	18	18	18	18
Mining	--	--	--	--
Urban	7	7	7	7
Construction	--	--	--	--

*Includes 31 sq. mi. of military reservation area

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08045	Projection Years			
	1970	1975	1980	1995
Population	22200	22690	19000	4110
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	22200	22690	19000	4110
Housing Units	28810	30148	31486	34627
Rural	--	--	--	--
Urban	28810	30148	31486	34627
Employment				
Manufacturing				
Non-manufacturing				
Land Use	36	36	36	36
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	36	36	36	36
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08046	Projection Years			
	1970	1975	1980	1995
Population	--	--	--	--
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	15090	15792	16493	18138
Rural	--	--	--	--
Urban	15090	15792	16493	18138
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	18	18	18	18
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08047	Projection Years			
	1970	1975	1980	1995
Population	10000	11270	4620	2025
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	10000	11270	4620	2025
Housing Units	43900	45940	47978	52765
Rural	--	--	--	--
Urban	43900	45940	47978	52765
Employment				
Manufacturing				
Non-manufacturing				
Land Use	55	55	55	55
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	55	55	55	55
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08048	Projection Years			
	1970	1975	1980	1995
Population	2100	2190	1240	660
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	2100	2190	1240	660
Housing Units	1370	1436	1499	1649
Rural	--	--	--	--
Urban	1370	1436	1499	1649
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08049	Projection Years			
	1970	1975	1980	1995
Population	25000	29425	16660	8820
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	25000	29425	16660	8820
Housing Units	13720	14356	14993	16489
Rural	--	--	--	--
Urban	13720	14356	14993	16489
Employment				
Manufacturing				
Non-manufacturing				
Land Use	16	16	16	16
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	16	16	16	16
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08050	Projection Years			
	1970	1975	1980	1995
Population	14355	16774	14680	14474
Rural	2355	2094	2380	3634
Farm	2355	2094	2380	3634
Non-farm	--	--	--	--
Urban	12000	14680	12300	10840
Housing Units	14440	15076	15713	17539
Rural	720	720	720	1050
Urban	13720	14356	14993	16489
Employment				
Manufacturing				
Non-manufacturing				
Land Use	39	39	39	39
Rural	22	22	17	3
Agriculture	18	18	14	2
Silviculture	4	4	3	1
Mining	--	--	--	--
Urban	17	17	22	36
Construction	--	--	5	14

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08051	Projection Years			
	1970	1975	1980	1995
Population	2630	3046	3462	5286
Rural	2630	3046	3462	5286
Farm	2630	3046	3462	5286
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	760	880	1001	1528
Rural	760	880	1001	1528
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	32	32	32	32
Rural	32	32	29	20
Agriculture	26	26	23	16
Silviculture	6	6	6	4
Mining	--	--	--	--
Urban	--	--	3	12
Construction	--	--	3	9

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08052	Projection Years 1970	1975	1980	1995
Population	4070	4631	5192	7409
Rural	4070	4631	5192	4733
Farm	2443	2780	3142	4733
Non-farm	1627	1851	2050	--
Urban	--	--	--	2676
Housing Units	1304	1484	1664	2375
Rural	1304	1484	1664	1517
Urban	--	--	--	858
Employment				
Manufacturing				
Non-manufacturing				
Land Use	40	40	40	40
Rural	36	36	33	26
Agriculture	29	29	26	21
Silviculture	7	7	7	5
Mining	--	--	--	--
Urban	4	4	7	14
Construction	--	--	3	7

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08053	Projection Years			
	1970	1975	1980	1995
Population	1315	1523	1731	2643
Rural	1315	1523	1731	2643
Farm	1315	1523	1731	2643
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	380	440	500	764
Rural	380	440	500	764
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	16	16	16	16
Rural	16	16	16	16
Agriculture	10	10	10	10
Silviculture	6	6	6	6
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08054	Projection Years			
	1970	1975	1980	1995
Population	704	789	874	1257
Rural	704	789	874	1257
Farm	704	789	874	1257
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	221	247	274	394
Rural	221	247	274	394
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	15	15	15	15
Rural	14	14	14	12
Agriculture	8	8	8	8
Silviculture	6	6	6	4
Mining	--	--	--	--
Urban	1	1	1	3
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08055	Projection Years			
	1970	1975	1980	1995
Population	129	123	117	101
Rural	129	123	117	101
Farm	129	123	117	101
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	44	44	44	44
Rural	44	44	44	44
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	5	5	5	5
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08056	Projection Years			
	1970	1975	1980	1995
Population	129	123	117	101
Rural	129	123	117	101
Farm	129	123	117	101
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	44	44	44	44
Rural	44	44	44	44
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	9	9	9	9
Rural	8	8	8	6
Agriculture	5	5	5	4
Silviculture	3	3	3	2
Mining	--	--	--	--
Urban	1	1	1	3
Construction	--	--	--	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08057	Projection Years			
	1970	1975	1980	1995
Population	519	493	467	403
Rural	519	493	467	403
Farm	519	493	467	403
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	178	178	178	178
Rural	178	178	178	178
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	32	32	32	32
Rural	32	32	32	32
Agriculture	19	19	19	19
Silviculture	13	13	13	13
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08058	Projection Years			
	1970	1975	1980	1995
Population	96	92	88	76
Rural	96	92	88	76
Farm	96	92	88	76
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	33	33	33	33
Rural	33	33	33	33
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	4	4	4	4
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08059	Projection Years			
	1970	1975	1980	1995
Population	48	46	44	38
Rural	48	46	44	38
Farm	48	46	44	38
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	16	16	16	16
Rural	16	16	16	16
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	2	2	2	1
Agriculture	1	1	1	1
Silviculture	1	1	1	--
Mining	--	--	--	--
Urban	1	1	1	2
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08060	Projection Years			
	1970	1975	1980	1995
Population	285	287	289	235
Rural	285	287	289	235
Farm	285	287	289	235
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	96	96	97	97
Rural	96	96	97	97
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	14	14	14	14
Agriculture	9	9	9	9
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08061	Projection Years			
	1970	1975	1980	1995
Population	284	300	316	245
Rural	284	300	316	245
Farm	284	300	316	245
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	93	99	104	104
Rural	93	99	104	104
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	9	9	9	9
Agriculture	6	6	6	6
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08062	Projection Years			
	1970	1975	1980	1995
Population	339	337	335	428
Rural	339	337	335	428
Farm	339	337	335	428
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	109	109	109	138
Rural	109	109	109	138
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	12	12	12	12
Rural	12	12	12	12
Agriculture	8	8	8	8
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08063	Projection Years			
	1970	1975	1980	1995
Population	115	113	111	160
Rural	115	113	111	160
Farm	115	113	111	160
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	36	36	36	50
Rural	36	36	36	50
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	4	4	4	4
Rural	4	4	4	4
Agriculture	3	3	3	3
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08064	Projection Years			
	1970	1975	1980	1995
Population	174	170	166	241
Rural	174	170	166	241
Farm	174	170	166	241
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	55	55	55	76
Rural	55	55	55	76
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	4	4	4	4
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08065	Projection Years			
	1970	1975	1980	1995
Population	1521	1714	1907	2959
Rural	1521	1714	1907	401
Farm	251	283	277	401
Non-farm	1270	1431	1630	--
Urban	--	--	--	2558
Housing Units	478	539	600	930
Rural	478	539	600	126
Urban	--	--	--	804
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	9	9	9	9
Agriculture	6	6	6	6
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08066	Projection Years			
	1970	1975	1980	1995
Population	317	311	305	441
Rural	317	311	305	441
Farm	317	311	305	441
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	100	100	100	139
Rural	100	100	100	139
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	11	11	11	11
Rural	10	10	10	10
Agriculture	7	7	7	7
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08067	Projection Years			
	1970	1975	1980	1995
Population	145	142	139	201
Rural	145	142	139	201
Farm	145	142	139	201
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	46	46	46	63
Rural	46	46	46	63
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	5	5	5	5
Agriculture	3	3	3	3
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08068	Projection Years			
	1970	1975	1980	1995
Population	3528	6558	9588	16138
Rural	3528	6558	9588	13035
Farm	3528	6558	7416	13035
Non-farm	--	--	2172	--
Urban	--	--	--	3103
Housing Units	1069	1987	2905	4890
Rural	1069	1987	2905	3950
Urban	--	--	--	940
Employment				
Manufacturing				
Non-manufacturing				
Land Use	81	81	81	81
Rural	78	78	77	75
Agriculture	56	56	55	54
Silviculture	22	22	22	21
Mining	--	--	--	--
Urban	3	3	4	6
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08069	Projection Years			
	1970	1975	1980	1995
Population	316	370	424	765
Rural	316	370	424	765
Farm	316	370	424	765
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	92	108	124	223
Rural	92	108	124	223
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	4	4	4	4
Rural	4	4	4	4
Agriculture	3	3	3	3
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08070	Projection Years			
	1970	1975	1980	1995
Population	633	741	849	1530
Rural	633	741	849	1530
Farm	633	741	849	1530
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	185	216	248	446
Rural	185	216	248	446
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	6	6	6	6
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08071	Projection Years			
	1970	1975	1980	1995
Population	14744	18297	21850	32843
Rural	3060	3797	4350	7843
Farm	3060	3797	4350	7843
Non-farm	--	--	--	--
Urban	11684	14500	17500	25000
Housing Units	4299	5334	6370	9575
Rural	892	1107	1268	2287
Urban	3407	4227	5102	7288
Employment				
Manufacturing				
Non-manufacturing				
Land Use	45	45	45	45
Rural	25	25	24	21
Agriculture	18	18	17	15
Silviculture	7	7	7	6
Mining	--	--	--	--
Urban	20	20	21	24
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08072	Projection Years			
	1970	1975	1980	1995
Population	1107	1296	1485	2678
Rural	1107	1296	1485	2678
Farm	1107	1296	1485	2678
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	323	378	433	781
Rural	323	378	433	781
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	13	13	13	13
Agriculture	9	9	9	9
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08073	Projection Years			
	1970	1975	1980	1995
Population	2611	3056	3501	6313
Rural	2611	3056	3501	3056
Farm	2611	3056	3501	3056
Non-farm	--	--	--	--
Urban	--	--	--	3257
Housing Units	761	891	1021	1841
Rural	761	891	1021	891
Urban	--	--	--	950
Employment				
Manufacturing				
Non-manufacturing				
Land Use	33	33	33	33
Rural	26	26	25	21
Agriculture	19	19	18	15
Silviculture	7	7	7	6
Mining	--	--	--	--
Urban	7	7	8	12
Construction	--	--	1	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08074	Projection Years			
	1970	1975	1980	1995
Population	475	556	637	1148
Rural	475	556	637	1148
Farm	475	556	637	1148
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	138	162	186	335
Rural	138	162	186	335
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	4	4	4	4
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

	Projection Years			
Segment 08075	1970	1975	1980	1995
Population	158	185	212	383
Rural	158	185	212	383
Farm	158	185	212	383
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	46	54	62	112
Rural	46	54	62	112
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	2	2	2	2
Agriculture	1	1	1	1
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08076	Projection Years			
	1970	1975	1980	1995
Population	711	833	955	1722
Rural	711	833	855	1722
Farm	711	833	955	1722
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	207	243	278	502
Rural	207	243	278	502
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	9	9	9	9
Rural	5	5	5	4
Agriculture	3	3	3	3
Silviculture	2	2	2	1
Mining	--	--	--	--
Urban	4	4	4	5
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08077	Projection Years 1970	1975	1980	1995
Population	553	648	743	1339
Rural	553	648	743	1339
Farm	553	648	743	1339
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	161	189	217	390
Rural	161	189	217	390
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	14	14	14	14
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08977	Projection Years			
	1970	1975	1980	1995
Population	1800	1800	--	--
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	1800	1800	--	--
Housing Units	1703	1825	1947	2311
Rural	--	--	--	--
Urban	1703	1825	1947	2311
Employment				
Manufacturing				
Non-manufacturing				
Land Use	4	4	4	4
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	4	4	4	4
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08078	Projection Years 1970	1975	1980	1995
Population	895	966	1037	1231
Rural	895	966	1037	1231
Farm	895	966	1037	1231
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	289	312	335	397
Rural	289	312	335	397
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	21	21	21	21
Rural	21	21	20	17
Agriculture	16	16	15	13
Silviculture	5	5	5	4
Mining	--	--	--	--
Urban	--	--	1	4
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08079	Projection Years			
	1970	1975	1980	1995
Population	128	138	148	176
Rural	128	138	148	176
Farm	128	138	148	176
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	41	45	48	57
Rural	41	45	48	57
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	3	3	3	3
Agriculture	2	2	2	2
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08080	Projection Years			
	1970	1975	1980	1995
Population	5875	6321	6767	8063
Rural	2037	2192	2350	2783
Farm	2037	2192	2350	2783
Non-farm	--	--	--	--
Urban	3838	4129	4417	5280
Housing Units	1895	2039	2183	2601
Rural	657	707	758	898
Urban	1238	1332	1425	1703
Employment				
Manufacturing				
Non-manufacturing				
Land Use	50	50	50	50
Rural	49	49	49	49
Agriculture	36	36	36	36
Silviculture	13	13	13	13
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08081	Projection Years			
	1970	1975	1980	1995
Population	256	276	296	352
Rural	256	276	296	352
Farm	256	276	296	352
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	83	89	95	114
Rural	83	89	95	114
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	4	4	4	4
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08082	Projection Years			
	1970	1975	1980	1995
Population	196	202	208	234
Rural	196	202	208	234
Farm	196	202	208	234
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	59	61	63	70
Rural	59	61	63	70
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	6	6	6	6
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08083	Projection Years			
	1970	1975	1980	1995
Population	245	245	245	245
Rural	245	245	245	245
Farm	245	245	245	245
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	79	79	79	79
Rural	79	79	79	79
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	9	9	9	9
Agriculture	5	5	5	5
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08084	Projection Years			
	1970	1975	1980	1995
Population	184	190	196	219
Rural	184	190	196	219
Farm	184	190	196	219
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	63	66	68	76
Rural	63	66	68	76
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	5	5	5	5
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08085	Projection Years			
	1970	1975	1980	1995
Population	1780	1865	1950	2245
Rural	1780	1865	1950	2245
Farm	1136	1190	1225	1370
Non-farm	644	675	725	875
Urban	--	--	--	--
Housing Units	614	643	672	774
Rural	614	643	672	774
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	51	51	51	51
Rural	50	50	50	50
Agriculture	32	32	32	32
Silviculture	18	18	18	18
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08086	Projection Years			
	1970	1975	1980	1995
Population	184	190	196	219
Rural	184	190	196	219
Farm	184	190	196	219
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	63	66	68	76
Rural	63	66	68	76
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	5	5	5	5
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08087	Projection Years			
	1970	1975	1980	1995
Population	948	966	984	1059
Rural	948	966	984	1059
Farm	948	966	984	1059
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	327	333	339	365
Rural	327	333	339	365
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	35	35	35	35
Rural	34	34	34	34
Agriculture	22	22	22	22
Silviculture	12	12	12	12
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08088	Projection Years			
	1970	1975	1980	1995
Population	695	695	695	695
Rural	695	695	695	695
Farm	695	695	695	695
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	240	240	240	240
Rural	240	240	240	240
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	18	18	18	18
Agriculture	12	12	12	12
Silviculture	6	6	6	6
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08089	Projection Years			
	1970	1975	1980	1995
Population	1327	1327	1327	1327
Rural	1327	1327	1327	1327
Farm	888	888	888	888
Non-farm	439	439	439	439
Urban	--	--	--	--
Housing Units	458	458	458	458
Rural	458	458	458	458
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	24	24	24	24
Rural	24	24	24	24
Agriculture	15	15	15	15
Silviculture	9	9	9	9
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08090	Projection Years			
	1970	1975	1980	1995
Population	251	251	251	251
Rural	251	251	251	251
Farm	251	251	251	251
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	87	87	87	87
Rural	87	87	87	87
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	6	6	6	5
Agriculture	4	4	4	3
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	1	1	1	2
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08091	Projection Years			
	1970	1975	1980	1995
Population	1617	1617	1617	1617
Rural	1617	1617	1617	1617
Farm	1617	1617	1617	1617
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	558	558	558	558
Rural	558	558	558	558
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	71	71	71	71
Rural	69	69	69	68
Agriculture	32	32	32	32
Silviculture	37	37	37	36
Mining	--	--	--	--
Urban	2	2	2	3
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08092	Projection Years			
	1970	1975	1980	1995
Population	213	213	213	213
Rural	213	213	213	213
Farm	213	213	213	213
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	73	73	73	73
Rural	73	73	73	73
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	10	10	10	10
Agriculture	4	4	4	4
Silviculture	6	6	6	6
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08093	Projection Years			
	1970	1975	1980	1995
Population	469	469	469	469
Rural	469	469	469	469
Farm	469	469	469	469
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	162	162	162	162
Rural	162	162	162	162
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	22	22	22	22
Rural	22	22	22	22
Agriculture	10	10	10	10
Silviculture	12	12	12	12
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08094	Projection Years			
	1970	1975	1980	1995
Population	1299	1299	1299	1299
Rural	1299	1299	1299	1299
Farm	1299	1299	1299	1299
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	448	448	448	448
Rural	448	448	448	448
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	61	61	61	61
Rural	59	59	59	59
Agriculture	26	26	26	26
Silviculture	33	33	33	33
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08095	Projection Years			
	1970	1975	1980	1995
Population	5453	5453	5453	5453
Rural	5453	5453	5453	5453
Farm	5453	5453	5453	5453
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	1880	1880	1880	1880
Rural	1880	1880	1880	1880
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	256	256	256	256
Rural	255	255	255	255
Agriculture	114	114	114	114
Silviculture	141	141	141	141
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08096	Projection Years			
	1970	1975	1980	1985
Population	170	170	170	170
Rural	170	170	170	170
Farm	170	170	170	170
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	59	59	59	59
Rural	59	59	59	59
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	3	3	3	3
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08097	Projection Years			
	1970	1975	1980	1995
Population	43	43	43	43
Rural	43	43	43	43
Farm	43	43	43	43
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	15	15	15	15
Rural	15	15	15	15
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	2	2	2	2
Agriculture	1	1	1	1
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08098	Projection Years			
	1970	1975	1980	1995
Population	64	64	64	64
Rural	64	64	64	64
Farm	64	64	64	64
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	22	22	22	22
Rural	22	22	22	22
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	3	3	3	3
Agriculture	1	1	1	1
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08099	Projection Years 1970	1975	1980	1995
Population	98	89	80	55
Rural	98	89	80	55
Farm	98	89	80	55
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	35	35	35	35
Rural	35	35	35	35
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	2	2	2	2
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08100	Projection Years			
	1970	1975	1980	1995
Population	147	133	119	83
Rural	147	133	119	83
Farm	147	133	119	83
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	53	53	53	53
Rural	53	53	53	53
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	3	3	3	2
Agriculture	1	1	1	1
Silviculture	2	2	2	1
Mining	--	--	--	--
Urban	--	--	--	1
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08101	Projection Years			
	1970	1975	1980	1995
Population	195	177	159	110
Rural	195	177	159	110
Farm	195	177	159	110
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	70	70	70	70
Rural	70	70	70	70
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	4	4	4	4
Rural	4	4	4	4
Agriculture	1	1	1	1
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08102	Projection Years			
	1970	1975	1980	1995
Population	293	266	239	166
Rural	293	266	239	166
Farm	293	266	239	166
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	105	105	105	105
Rural	105	105	105	105
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	6	6
Agriculture	2	2	2	2
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08103	Projection Years			
	1970	1975	1980	1995
Population	1258	1644	2030	3135
Rural	1258	1644	2030	55
Farm	68	89	80	55
Non-farm	1190	1555	1950	--
Urban	--	--	--	3080
Housing Units	451	589	728	1124
Rural	451	589	728	20
Urban	--	--	--	1104
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	2	2	2	2
Agriculture	1	1	1	1
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08104	Projection Years			
	1970	1975	1980	1995
Population	1923	2339	2755	3980
Rural	1923	2339	80	55
Farm	73	89	80	55
Non-farm	1850	2250	--	--
Urban	--	--	2675	3925
Housing Units	689	838	987	1427
Rural	689	838	29	29
Urban	--	--	958	1398
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	4	4	4	4
Agriculture	1	1	1	1
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	3	3	3	3
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08105	Projection Years			
	1970	1975	1980	1995
Population	147	133	119	83
Rural	147	133	119	83
Farm	147	133	119	83
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	53	53	53	53
Rural	53	53	53	53
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	1	1	1	1
Agriculture	--	--	--	--
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08106	Projection Years			
	1970	1975	1980	1995
Population	1274	1375	1476	1784
Rural	1274	1375	1476	1784
Farm	309	319	329	362
Non-farm	965	1056	1147	1422
Urban	--	--	--	--
Housing Units	453	489	525	635
Rural	453	489	525	635
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	15	15	15	15
Rural	11	11	9	1
Agriculture	4	4	3	--
Silviculture	7	7	6	1
Mining	--	--	--	--
Urban	4	4	6	14
Construction	--	--	2	8

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08107	Projection Years			
	1970	1975	1980	1995
Population	102	118	134	178
Rural	102	118	134	178
Farm	102	118	134	178
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	36	42	47	63
Rural	36	42	47	63
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	3	3	2	--
Agriculture	1	1	1	--
Silviculture	2	2	1	--
Mining	--	--	--	--
Urban	4	4	5	7
Construction	--	--	1	2

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08108	1970	1975	1980	1995
Population	74	85	96	127
Rural	74	85	96	127
Farm	74	85	96	127
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	26	30	34	45
Rural	26	30	34	45
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	6	6	6	6
Rural	6	6	5	1
Agriculture	2	2	2	--
Silviculture	4	4	3	1
Mining	--	--	--	--
Urban	--	--	1	5
Construction	--	--	1	4

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10001	Projection Years			
	1970	1975	1980	1995
Population	295	262	229	196
Rural	295	262	229	196
Farm	295	262	229	196
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	102	102	102	102
Rural	102	102	102	102
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	16	16	16	16
Rural	15	15	15	15
Agriculture	11	11	11	11
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10002	Projection Years			
	1970	1975	1980	1995
Population	3264	3585	3906	4437
Rural	746	819	616	377
Farm	746	819	616	377
Non-farm	--	--	--	--
Urban	2518	2766	3290	4060
Housing Units	1004	1103	1202	1365
Rural	230	252	252	252
Urban	774	851	950	1113
Employment				
Manufacturing				
Non-manufacturing				
Land Use	48	48	48	48
Rural	46	46	46	45
Agriculture	28	28	26	20
Silviculture	6	6	5	4
Mining	12	12	15	21
Urban	2	2	2	3
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10003	Projection Years			
	1970	1975	1980	1995
Population	340	298	256	212
Rural	340	298	256	212
Farm	340	298	256	212
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	118	118	118	118
Rural	118	118	118	118
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	17	17	17	17
Agriculture	12	12	12	12
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10004	Projection Years			
	1970	1975	1980	1995
Population	5185	5165	5145	5078
Rural	2424	2415	2308	1867
Farm	2424	2415	2308	1867
Non-farm	--	--	--	--
Urban	2761	2750	2837	3211
Housing Units	1788	1788	1788	1788
Rural	836	836	836	836
Urban	952	952	952	952
Employment				
Manufacturing				
Non-manufacturing				
Land Use	139	139	139	139
Rural	135	135	134	131
Agriculture	88	88	86	79
Silviculture	36	36	34	32
Mining	11	11	14	20
Urban	4	4	5	8
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10005	Projection Years			
	1970	1975	1980	1995
Population	2040	2057	2074	2105
Rural	2040	2057	2074	2105
Farm	2040	2057	2074	2105
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	791	797	804	816
Rural	791	797	804	816
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	130	130	130	130
Rural	130	130	130	130
Agriculture	84	84	84	84
Silviculture	46	46	46	46
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10006	Projection Years			
	1970	1975	1980	1995
Population	4314	4494	4674	6100
Rural	44	44	44	36
Farm	44	44	44	36
Non-farm	--	--	--	--
Urban	4270	4450	4630	6064
Housing Units	1685	1755	1826	2383
Rural	17	17	17	17
Urban	1668	1738	1809	2366
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	4	4	4	4
Agriculture	2	2	2	1
Silviculture	1	1	1	1
Mining	1	1	1	2
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10007	Projection Years			
	1970	1975	1980	1995
Population	138	140	142	147
Rural	138	140	142	147
Farm	138	140	142	147
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	53	54	55	57
Rural	53	54	55	57
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	8	8	8	8
Agriculture	5	5	5	5
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10008	Projection Years 1970	1975	1980	1995
Population	2784	3488	4192	1843
Rural	2784	3488	4192	1843
Farm	2784	3488	4192	1843
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	984	1233	1481	1481
Rural	984	1233	1481	1481
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	151	151	151	151
Rural	148	148	148	148
Agriculture	69	69	66	61
Silviculture	56	56	54	48
Mining	23	23	28	39
Urban	3	3	3	3
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10009	Projection Years			
	1970	1975	1980	1995
Population	3204	3439	3674	2898
Rural	3204	3439	3674	2898
Farm	884	1119	1354	578
Non-farm	2320	2320	2320	2320
Urban	--	--	--	--
Housing Units	1132	1215	1298	1298
Rural	1132	1215	1298	1298
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	48	48	48	48
Rural	42	42	42	42
Agriculture	16	16	13	11
Silviculture	13	13	13	9
Mining	13	13	16	22
Urban	6	6	6	6
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10010	Projection Years 1970	1975	1980	1995
Population	2374	2530	2686	2594
Rural	2374	2530	2686	2594
Farm	2374	2530	2686	2594
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	863	920	977	977
Rural	863	920	977	977
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	123	123	123	123
Rural	123	123	123	123
Agriculture	62	62	62	62
Silviculture	61	61	61	61
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10011	Projection Years 1970	1975	1980	1995
Population	1009	1035	1061	1191
Rural	1009	1035	1061	1191
Farm	1009	1035	1061	1191
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	378	388	397	446
Rural	378	388	397	446
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	53	53	53	53
Rural	52	52	52	52
Agriculture	26	26	26	26
Silviculture	26	26	26	26
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10012	Projection Years			
	1970	1975	1980	1995
Population	3728	4019	4310	4701
Rural	728	819	910	701
Farm	728	819	910	701
Non-farm	--	--	--	--
Urban	3000	3200	3400	4000
Housing Units	1356	1461	1567	1709
Rural	265	298	331	255
Urban	1091	1163	1236	1454
Employment				
Manufacturing				
Non-manufacturing				
Land Use	42	42	42	42
Rural	38	38	38	38
Agriculture	20	20	20	20
Silviculture	18	18	18	18
Mining	--	--	--	--
Urban	4	4	4	4
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10013	Projection Years			
	1970	1975	1980	1995
Population	624	624	624	614
Rural	624	624	624	614
Farm	624	624	624	614
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	204	204	204	204
Rural	204	204	204	204
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	26	26	26	26
Rural	26	26	26	26
Agriculture	13	13	13	13
Silviculture	13	13	13	13
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 10014	Projection Years			
	1970	1975	1980	1995
Population	3952	4159	4366	3303
Rural	3952	4159	4366	3303
Farm	3321	3528	3735	2672
Non-farm	631	631	631	631
Urban	--	--	--	--
Housing Units	1259	1325	1390	1390
Rural	1259	1325	1390	1390
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	136	136	136	136
Rural	134	134	134	134
Agriculture	60	60	59	56
Silviculture	60	60	58	54
Mining	14	14	17	24
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11001	Projection Years			
	1970	1975	1980	1995
Population	3856	3500	3144	2180
Rural	3856	3500	3144	2180
Farm	3856	3500	3144	2180
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	1382	1382	1382	1382
Rural	1382	1382	1382	1382
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	80	80	80	80
Rural	77	77	74	65
Agriculture	23	23	22	19
Silviculture	54	54	52	46
Mining	--	--	--	--
Urban	3	3	6	15
Construction	--	--	3	9

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11002	Projection Years			
	1970	1975	1980	1995
Population	1024	930	836	580
Rural	1024	930	836	580
Farm	1024	930	836	580
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	367	367	367	367
Rural	367	367	367	367
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	21	21	21	21
Rural	21	21	21	21
Agriculture	6	6	6	6
Silviculture	15	15	15	15
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11003	Projection Years			
	1970	1975	1980	1995
Population	488	443	398	276
Rural	488	443	398	276
Farm	488	443	398	276
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	175	175	175	175
Rural	175	175	175	175
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	10	10	10	10
Agriculture	3	3	3	3
Silviculture	7	7	7	7
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11004	Projection Years			
	1970	1975	1980	1995
Population	2734	2499	2264	1631
Rural	2734	2499	2264	1631
Farm	2734	2499	2264	1631
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	980	980	980	980
Rural	980	980	980	980
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	57	57	57	57
Rural	57	57	57	57
Agriculture	17	17	17	17
Silviculture	40	40	40	40
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11005	Projection Years			
	1970	1975	1980	1995
Population	2011	1944	1877	1718
Rural	2011	1944	1877	1718
Farm	2011	1944	1877	1718
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	890	890	890	890
Rural	890	890	890	890
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	48	48	48	48
Rural	47	47	47	47
Agriculture	14	14	14	14
Silviculture	33	33	33	33
Mining	--	--	--	--
Urban	1	1	1	1
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 11006	Projection Years			
	1970	1975	1980	1995
Population	6326	6404	6482	6724
Rural	6326	6404	6482	6724
Farm	6326	6404	6482	6724
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	2799	2834	2868	2975
Rural	2799	2834	2868	2975
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	127	127	127	127
Rural	123	123	121	115
Agriculture	39	39	38	36
Silviculture	84	84	83	79
Mining	--	--	--	--
Urban	4	4	6	12
Construction	--	--	2	6

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08200	Projection Years			
	1970	1975	1980	1995
Population	60	68	76	102
Rural	60	68	76	102
Farm	60	68	76	102
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	21	24	27	36
Rural	21	24	27	36
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	4	4	4	4
Rural	-	-	-	-
Agriculture	-	-	-	-
Silviculture	-	-	-	-
Mining	-	-	-	-
Urban	4	4	4	4
Construction	-	-	-	-

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08201	Projection Years 1970	1975	1980	1995
Population	31268	33848	36428	41729
Rural	2289	2478	78	79
Farm	78	78	78	79
Non-farm	2211	2400	--	--
Urban	28979	31370	36350	41650
Housing Units	11127	12046	12964	14850
Rural	815	882	28	28
Urban	10312	11164	12936	14822
Employment				
Manufacturing				
Non-manufacturing				
Land Use	7	7	7	7
Rural	-	-	-	-
Agriculture	-	-	-	-
Silviculture	-	-	-	-
Mining	-	-	-	-
Urban	7	7	7	7
Construction	-	-	-	-

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08202	Projection Years			
	1970	1975	1980	1995
Population	8798	10764	12730	18580
Rural	1442	1764	2030	55
Farm	89	89	80	55
Non-farm	1353	1675	1950	--
Urban	7356	9000	10700	18525
Housing Units	3153	3858	4563	6659
Rural	517	632	728	20
Urban	2636	3224	3835	6639
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	-	-	-	-
Agriculture	-	-	-	-
Silviculture	-	-	-	-
Mining	-	-	-	-
Urban	3	3	3	3
Construction	-	-	-	-

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08203	Projection Years			
	1970	1975	1980	1995
Population	440	399	358	248
Rural	440	399	358	248
Farm	440	339	358	248
Non-farm	---	---	---	---
Urban	---	---	---	---
Housing Units	158	158	158	158
Rural	158	158	158	158
Urban	---	---	---	---
Employment				
Manufacturing				
Non-manufacturing				
Land Use	10	10	10	10
Rural	6	6	6	6
Agriculture	2	2	2	2
Silviculture	4	4	4	4
Mining	-	-	-	-
Urban	4	4	4	4
Construction	-	-	-	-

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08204	Projection Years			
	1970	1975	1980	1995
Population	1090	1354	1618	2146
Rural	1090	1354	1618	2146
Farm	285	354	318	221
Non-farm	805	1000	1300	1925
Urban	---	----	----	----
Housing Units	391	485	580	769
Rural	391	485	580	769
Urban	---	---	---	---
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	-	-	-	-
Agriculture	-	-	-	-
Silviculture	-	-	-	-
Mining	-	-	-	-
Urban	8	8	8	8
Construction	-	-	-	-

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08205	Projection Years			
	1970	1975	1980	1995
Population	3319	3310	3301	3276
Rural	3319	3310	3301	3276
Farm	1327	1318	1309	1284
Non-farm	1992	1992	1992	1992
Urban	----	----	----	----
Housing Units	1144	1144	1144	1144
Rural	1144	1144	1144	1144
Urban	----	----	----	----
Employment				
Manufacturing				
Non-manufacturing				
Land Use	53	53	53	53
Rural	46	46	43	38
Agriculture	23	23	22	19
Silviculture	23	23	21	19
Mining	--	--	--	--
Urban	7	7	10	15
Construction	--	--	3	5

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08206	Projection Years			
	1970	1975	1980	1995
Population	9483	9618	9753	10144
Rural	2396	2430	2565	2956
Farm	595	603	613	654
Non-farm	1801	1827	1952	2302
Urban	7087	7188	7188	7188
Housing Units	3270	3317	3363	3498
Rural	826	838	884	1019
Urban	2444	2479	2479	2479
Employment				
Manufacturing				
Non-manufacturing				
Land Use	23	23	23	23
Rural	21	21	21	21
Agriculture	13	13	13	13
Silviculture	8	8	8	8
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08207	Projection Years			
	1970	1975	1980	1995
Population	723	771	819	954
Rural	723	771	819	954
Farm	723	771	819	954
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	232	248	263	307
Rural	232	248	263	307
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	25	25	25	25
Rural	17	17	17	17
Agriculture	11	11	11	11
Silviculture	6	6	6	6
Mining	--	--	--	--
Urban	8	8	8	8
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08208	Projection Years			
	1970	1975	1980	1995
Population	--	--	--	--
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	955	1024	1093	1298
Rural	--	--	--	--
Urban	955	1024	1093	1298
Employment				
Manufacturing				
Non-manufacturing				
Land Use	8	8	8	8
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	8	8	8	8
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08209	Projection Years			
	1970	1975	1980	1995
Population	121871	170019	218167	302104
Rural	730	1019	1167	2104
Farm	730	1019	1167	2104
Non-farm	--	--	--	--
Urban	121141	169000	217000	300000
Housing Units	35531	49568	63606	88077
Rural	213	297	340	613
Urban	35318	49271	63266	87464
Employment				
Manufacturing				
Non-manufacturing				
Land Use	17	17	17	17
Rural	9	9	9	8
Agriculture	6	6	6	6
Silviculture	3	3	3	2
Mining	--	--	--	--
Urban	8	8	8	9
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08210	Projection Years			
	1970	1975	1980	1995
Population	1958	2220	2482	4347
Rural	1958	2220	2482	4347
Farm	1958	2220	2482	4347
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	592	671	750	1313
Rural	592	671	750	1313
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	34	34	34	34
Rural	30	30	30	30
Agriculture	22	22	22	22
Silviculture	8	8	8	8
Mining	--	--	--	--
Urban	4	4	4	4
Construction	--	--	--	--

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EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08211	Projection Years			
	1970	1975	1980	1995
Population	835	898	961	1105
Rural	835	898	961	1105
Farm	434	467	485	432
Non-farm	401	431	476	673
Urban	--	--	--	--
Housing Units	268	289	309	355
Rural	268	289	309	355
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	16	16	16	16
Agriculture	11	11	11	11
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	2	2	2	2
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08212	Projection Years			
	1970	1975	1980	1995
Population	2769	3077	3385	4470
Rural	2769	3077	3385	4470
Farm	1995	2217	2425	3210
Non-farm	774	860	960	1260
Urban	--	--	--	--
Housing Units	888	986	1085	1433
Rural	888	986	1085	1433
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	54	54	54	54
Rural	53	53	52	49
Agriculture	36	36	35	33
Silviculture	17	17	17	16
Mining	--	--	--	--
Urban	1	1	2	5
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08213	Projection Years 1970	1975	1980	1995
Population	355	380	25016	45630
Rural	165	190	216	330
Farm	165	190	216	330
Non-farm	--	--	--	--
Urban	190	190	24800	45300
Housing Units	N/A*	N/A*	N/A*	N/A*
Rural	--	--	--	--
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	14	14	14	14
Rural	2	2	2	1
Agriculture	2	2	2	1
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	12	12	12	13
Construction	--	--	--	1

*Primarily commercial and industrial

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08214	Projection Years			
	1970	1975	1980	1995
Population	490000	500000	520000	520000
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	490000	500000	520000	520000
Housing Units	N/A*	N/A*	N/A*	N/A*
Rural	--	--	--	--
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	9	9	9	9
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	9	9	9	9
Construction	--	--	--	--

*Primarily commercial and industrial

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08215	Projection Years			
	1970	1975	1980	1995
Population	15000	18000	112000	320000
Rural	--	--	--	--
Farm	--	--	--	--
Non-farm	--	--	--	--
Urban	15000	18000	112000	320000
Housing Units	N/A*	N/A*	N/A*	N/A*
Rural	--	--	--	--
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	5	5	5	5
Rural	--	--	--	--
Agriculture	--	--	--	--
Silviculture	--	--	--	--
Mining	--	--	--	--
Urban	5	5	5	5
Construction	--	--	--	--

*Primarily commercial and industrial

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08216	Projection Years			
	1970	1975	1980	1995
Population	3599	3596	3593	3557
Rural	3599	3596	3593	3557
Farm	1850	1848	1824	1695
Non-farm	1749	1748	1769	1862
Urban	--	--	--	--
Housing Units	957	957	957	957
Rural	957	957	957	957
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	38	38	38	38
Rural	36*	36*	35*	33*
Agriculture	5	5	4	3
Silviculture	5	5	5	4
Mining	--	--	--	--
Urban	2	2	3	5
Construction	--	--	1	2

*Includes 26 sq. mi. of military reservation area

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08217	Projection Years			
	1970	1975	1980	1995
Population	5059	5170	5281	5801
Rural	5059	5170	5281	5801
Farm	1833	1873	1757	1302
Non-farm	3226	3277	3524	4499
Urban	--	--	--	--
Housing Units	1715	1753	1790	1966
Rural	1715	1753	1790	1966
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	61	61	61	61
Rural	57	57	56	53
Agriculture	29	29	29	27
Silviculture	28	28	27	26
Mining	--	--	--	--
Urban	4	4	5	8
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08218	Projection Years			
	1970	1975	1980	1995
Population	1419	1727	2035	3090
Rural	1419	1727	2035	290
Farm	104	127	135	290
Non-farm	1315	1600	1900	--
Urban	--	--	--	2800
Housing Units	475	578	681	1033
Rural	475	578	681	97
Urban	--	--	--	936
Employment				
Manufacturing				
Non-manufacturing				
Land Use	9	9	9	9
Rural	6	6	5	2
Agriculture	3	3	3	1
Silviculture	3	3	2	1
Mining	--	--	--	--
Urban	3	3	4	7
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08219	Projection Years			
	1970	1975	1980	1995
Population	2428	2734	3040	4141
Rural	2428	2734	3040	1141
Farm	16	18	19	41
Non-farm	2412	2716	3021	1100
Urban	--	--	--	3000
Housing Units	793	893	993	1353
Rural	793	893	993	373
Urban	--	--	--	980
Employment				
Manufacturing				
Non-manufacturing				
Land Use	12	12	12	12
Rural	9	9	9	8
Agriculture	7	7	7	6
Silviculture	2	2	2	2
Mining	--	--	--	--
Urban	3	3	3	4
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08220	Projection Years			
	1970	1975	1980	1995
Population	50018	55059	60100	77930
Rural	703	774	821	1001
Farm	703	774	821	1001
Non-farm	--	--	--	--
Urban	49315	54285	59279	76929
Housing Units	16399	18052	19705	25551
Rural	230	254	269	328
Urban	16169	17798	19436	25223
Employment				
Manufacturing				
Non-manufacturing				
Land Use	18	18	18	18
Rural	18	18	17	14
Agriculture	14	14	13	11
Silviculture	4	4	4	3
Mining	--	--	--	--
Urban	--	--	1	4
Construction	--	--	1	3

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08221	Projection Years			
	1970	1975	1980	1995
Population	386	394	402	472
Rural	386	394	402	472
Farm	386	394	402	472
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	131	134	136	160
Rural	131	134	136	160
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	24	24	24	24
Rural	20	20	20	20
Agriculture	15	15	15	15
Silviculture	5	5	5	5
Mining	--	--	--	--
Urban	4	4	4	4
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08222	Projection Years			
	1970	1975	1980	1995
Population	23521	24909	26297	30553
Rural	502	532	519	572
Farm	502	532	519	572
Non-farm	--	--	--	--
Urban	23019	24377	25778	29981
Housing Units	7587	8035	8483	9856
Rural	162	172	172	185
Urban	7425	7863	8311	9671
Employment				
Manufacturing				
Non-manufacturing				
Land Use	24	24	24	24
Rural	22	22	22	21
Agriculture	17	17	17	17
Silviculture	5	5	5	4
Mining	--	--	--	--
Urban	2	2	2	3
Construction	--	--	--	1

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08223	Projection Years			
	1970	1975	1980	1995
Population	333	267	201	123
Rural	333	267	201	123
Farm	333	267	201	123
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	102	102	102	102
Rural	102	102	102	102
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	15	15	15	15
Rural	15	15	15	15
Agriculture	12	12	12	12
Silviculture	3	3	3	3
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08224	Projection Years			
	1970	1975	1980	1995
Population	1174	1208	1242	1397
Rural	1174	1208	1242	1397
Farm	1174	1208	1242	1397
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	462	476	489	550
Rural	462	476	489	550
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	60	60	60	60
Rural	60	60	60	60
Agriculture	38	38	38	38
Silviculture	22	22	22	22
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08225	Projection Years			
	1970	1975	1980	1995
Population	468	485	502	575
Rural	468	485	502	575
Farm	468	485	502	575
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	184	190	197	225
Rural	184	190	197	225
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	21	21	21	21
Rural	21	21	21	21
Agriculture	14	14	14	14
Silviculture	7	7	7	7
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08226	Projection Years			
	1970	1975	1980	1995
Population	29010	30410	31810	35614
Rural	478	501	478	442
Farm	478	501	478	442
Non-farm	--	--	--	--
Urban	28532	29909	31332	35172
Housing Units	10784	11305	11825	13239
Rural	178	186	186	186
Urban	10606	11119	11639	13053
Employment				
Manufacturing				
Non-manufacturing				
Land Use	13	13	13	13
Rural	10	10	10	10
Agriculture	6	6	6	6
Silviculture	4	4	4	4
Mining	--	--	--	--
Urban	3	3	3	3
Construction	--	--	--	--

EXHIBIT B1.2t (Continued) BASIC PLANNING DATA

Segment 08227	Projection Years			
	1970	1975	1980	1995
Population	52	50	48	43
Rural	52	50	48	43
Farm	52	50	48	43
Non-farm	--	--	--	--
Urban	--	--	--	--
Housing Units	20	20	20	20
Rural	20	20	20	20
Urban	--	--	--	--
Employment				
Manufacturing				
Non-manufacturing				
Land Use	3	3	3	3
Rural	3	3	3	3
Agriculture	2	2	2	2
Silviculture	1	1	1	1
Mining	--	--	--	--
Urban	--	--	--	--
Construction	--	--	--	--

EXHIBIT B1.3t STANDARDS VIOLATIONS

Segment Number and Location	Date	Parameter -- Standard/Violation				
		NH3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	Other
Segment Number 08050 Station Location: Harrods Creek at US Hwy. 42 bridge	9/19/72		$\frac{5.0}{1.3}$			
	9/29/72		$\frac{5.0}{1.7}$			
	9/21/72		$\frac{5.0}{2.1}$			
	9/23/72		$\frac{5.0}{2.0}$			
Segment Number 10001 Station Location: Tradewater River at KY365 near Sturgis	10/31/67				$\frac{6.0}{5.5}$	
	11/2/67				$\frac{6.0}{3.6}$	
	11/3/67				$\frac{6.0}{3.8}$	
	11/3/67				$\frac{6.0}{5.5}$	
Segment Number 10010 Station Location: Tradewater River at County Road near Quinn	10/13/67				$\frac{6.0}{4.7}$	
	10/16/67				$\frac{6.0}{4.7}$	
Staion Location: Tradewater River at KY70 near Fryer	10/16/67		$\frac{5.0}{4.7}$		$\frac{6.0}{5.7}$	
	10/17/67				$\frac{6.0}{5.3}$	
	10/19/67				$\frac{6.0}{5.1}$	

EXHIBIT B1.3t (Continued) STANDARDS VIOLATIONS

Segment Number and Location	Date	Parameter -- Standard/Violation				
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	Other
Station Location: Tradewater River at KY 1220 at Olney	6/14/67				$\frac{6.0}{4.4}$	
	10/16/67				$\frac{6.0}{4.3}$	
	10/17/67				$\frac{6.0}{4.6}$	
	10/18/67				$\frac{6.0}{4.6}$	
	4/11/68				$\frac{6.0}{5.6}$	
	4/12/68				$\frac{6.0}{5.9}$	
Segment Number 10012 Station Location: Tradewater River at US 62, Dawson Springs	6/2/67				$\frac{6.0}{5.0}$	
	10/16/67		$\frac{5.0}{4.2}$		$\frac{6.0}{3.5}$	
	10/17/67				$\frac{6.0}{4.1}$	
	10/18/67				$\frac{6.0}{3.4}$	
	10/19/67				$\frac{6.0}{3.2}$	
Segment Number 10014 Station Location: Tradewater River at KY 109, Dawson Springs	6/2/67				$\frac{6.0}{3.8}$	
	10/16/67		$\frac{5.0}{4.9}$		$\frac{6.0}{3.3}$	
	10/17/67		$\frac{5.0}{4.0}$		$\frac{6.0}{3.2}$	
	10/18/67				$\frac{6.0}{3.2}$	
	10/19/67				$\frac{6.0}{3.3}$	

EXHIBIT B1.3t (Continued) STANDARDS VIOLATIONS

Segment Number and Location	Date	Parameter -- Standard/Violation				
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	Other
Station Location: Tradewater River at County Road near St. Charles	9/26/67		$\frac{5.0}{4.6}$			
	9/27/67		$\frac{5.0}{4.7}$			
Station Location: Tradewater River at County Road near Kelly	9/28/67		$\frac{5.0}{4.1}$			
Segment Number 08200 Station Location: Ohio River below mouth of Big Sandy River	10/23/68		$\frac{5.0}{4.0}$			
	9/17/69		$\frac{5.0}{4.5}$			
	6/16/71				$\frac{6.0}{5.8}$	
Segment Number 08201 Station Location: Ohio River at Ironton, Ohio	8/19/69		$\frac{5.0}{3.8}$			
Segment Number 08204 Station Location: Ohio River below Portsmouth, Ohio	8/19/69		$\frac{5.0}{4.7}$			
Station Location: Ohio River above Greenup Dam	8/19/69		$\frac{5.0}{3.4}$			
	9/24/69		$\frac{5.0}{4.5}$			
Segment Number 08205 Station Location: Ohio River at Maysville	8/19/69		$\frac{5.0}{4.0}$			

EXHIBIT B1.3t (Continued) STANDARDS VIOLATIONS

Segment Number and Location	Date	Parameter -- Standard/Violation				
		NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	Other
Segment Number 08207						
Station Location: Ohio River at Meldahl Dam	1/15/69		$\frac{5.0}{2.7}$			
	8/19/69		$\frac{5.0}{4.4}$			
Station Location: Ohio River at Cincinnati	6/22/60		$\frac{5.0}{4.9}$			
	7/6/60		$\frac{5.0}{4.5}$			
	9/7/60				$\frac{8.5}{8.7}$	
	6/14/61		$\frac{5.0}{4.9}$			
	9/20/61				$\frac{8.5}{9.1}$	
	8/7/63		$\frac{5.0}{2.6}$			
	9/23/64		$\frac{5.0}{4.4}$			
	10/21/64		$\frac{5.0}{4.5}$			
	6/30/65		$\frac{5.0}{4.8}$			
	7/14/65		$\frac{5.0}{4.9}$			
	7/21/65		$\frac{5.0}{4.0}$			
	7/28/65		$\frac{5.0}{3.7}$			
	8/4/65		$\frac{5.0}{4.6}$			
	8/18/65		$\frac{5.0}{4.9}$			
	8/25/65		$\frac{5.0}{4.3}$			

EXHIBIT B1.3t (Continued) STANDARDS VIOLATIONS

Segment Number and Location	Date	Parameter -- Standard/Violation NH_3-N Total (mg/L)	DO (mg/L)	Temp. (°C)	pH (Standard Unit)	Other
	9/1/65		5.0/4.6			
	9/8/65		5.0/4.5			
	9/15/65		5.0/4.1			
	9/22/65		5.0/4.4			
	10/20/65		5.0/4.7			
	10/27/65		5.0/4.3			
	7/12/67		5.0/4.3			
	7/19/67		5.0/4.4			
	8/9/67		5.0/4.9			
	9/20/67		5.0/4.8			
	8/7/68		5.0/4.8			
	8/19/69		5.0/4.5			
	5/20/71		5.0/4.2			
Segment Number 08209 Station Location: Ohio River At Miami Fort, Ohio	8/20/69		5.0/0.0			
	10/22/69		5.0/4.2			
	9/23/70		5.0/4.0			
	9/25/73		5.0/4.9			
Station Location: Ohio River at Andersons Ferry	8/21/69		5.0/4.2			

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q7-10 (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD5	SS	NH3	DO
01506005	Ashland Oil Service Station	Everman Ck. 645.0/34.20/2.17		Extended Aeration	0.0	0.001	24.0		2.25	4.0
01606006	Cloverleaf Trailer Park	Barrett Ck. 645.0/34.60/1.90		Extended Aeration	0.0	0.0025	24.0		2.25	4.0
01706006	Humble Oil Service Station	Barret Ck. 645.0/34.60/0.90/ 0.50		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
01806006	Sun Oil Service Station	Barrett Ck. 645.0/34.60/0.90/ 0.50		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
01906007	Grayson (STP)	Little Sandy R. 645.0/37.70		Trickling Filter	1.0	0.35	40.0		12.0	4.0
02206007	East Carter County High School	Little Sandy R. 645.0/38.70/0.60		Extended Aeration	0.0	0.007	24.0		2.25	4.0
02306008	Conley's Trailer Park	Wilson Ck. 645.0/28.20/5.10/ 0.90		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
02406009	Graham Jr. High School	Little Sandy Creek 645.0/46.90/5.40		Extended Aeration	0.0	0.0021	24.0		2.25	4.0
02506010	Celestial Camper Court	Big Sinking Ck. 645.0/49.90/0.60		Extended Aeration	0.0	0.005	24.0		2.25	4.0
02606012	Hitchens Consol. School	Little Fork 645.0/41.40/4.69		Extended Aeration	0.0	0.007	24.0		2.25	4.0
02706013	Mico Mfg. Co.	Little Sandy R. 645.0/74.30		Extended Aeration	1.0	0.003	24.0		2.25	4.0
02806013	Elliott County Elem. School	Little Sandy R. 645.0/74.10		Septic Tank & Sand Filter	1.0	0.0093	24.0		1.5	4.0
02906013	Lakeside Elem. School	Little Sandy R. 645.0/70.10/0.20/ 0.30		Extended Aeration	0.0	0.0036	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
03208001	Fin & Feather Lodge	Humphrey Ck. 13.70/3.40/3.0/0.66		Septic Tank & Sand Filter	0.0	0.13	24.0		1.5	4.0
03308001	La Center (STP)	Humphrey Ck. 13.70/10.80/1.0/0.50		Trickling Filter	0.0	0.11	31.0		6.0	4.0
03408001	Bandana Elementary School	Humphrey Ck. 13.70/3.40/8.44/0.20		Septic Tank & Sand Filter	0.0	0.004	24.0		1.5	4.0
03508001	Ballard County High School	Humphrey Ck. 13.70/10.80/1.0/1.50/0.30		Extended Aeration	0.0	0.01	24.0		2.25	4.0
03608002	Kevil (STP)	Humphrey Ck. 13.70/14.50/1.55/1.30		Lagoon	0.0	0.04	40.0		2.3	8.5
03708005	A.E.C. Paducah	Bayou Ck. 33.60/6.50		Cooling Water	0.0	3.5	0.35		0.0	4.0
03808005	Forrestdale School	Bayou Ck. 33.60/8.70/0.65		Extended Aeration	0.0	0.003	24.0		2.25	4.0
03908906	Essex Wire Corp.	Unnamed Tributary 37.20/0.40/0.20		Extended Aeration	0.0	0.007	24.0		2.25	4.0
04208007	Paducah Realty Co.	Massac Ck. 38.70/9.60/1.20		Septic Tank & Sand Filter	0.0	0.004	24.0		2.25	4.0
04308007	Heath Upper Elem. & High School	Massac Ck. 38.70/4.20/3.50/0.10/0.60		Extended Aeration	0.0	0.0117	24.0		2.25	4.0
04408008	McCracken #1	Perkins Ck. 42.0/9.7		Extended Aeration	0.0	0.176	24.0		2.25	4.0
04508008	McCracken #2	Perkins Ck. 42.0/9.30/0.60		Trickling Filter	0.0	0.35	20.0		12.00	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
04608012	West Kentucky Youth Camp	Hurricane Ck. 95.40/0.68/8.04/1.30		Septic Tank & Sand Filter	0.0	0.0049	24.0		1.5	4.0
04708013	Marion (STP)	Crooked Ck. 103.60/17.50/1.34		Extended Aeration	0.0	0.32	14.0		1.1	8.5
04808015	Buffalo Branch Trailer Park	Goose Pond Ditch 114.70/10.30/2.60		Extended Aeration	0.0	0.04	24.0		2.25	4.0
04908915	Island Creek Coal Co.	Unnamed Tributary 128.10/1.60		Extended Aeration	0.0	0.0025	24.0		2.25	4.0
05208018	Uniontown (STP)	Lost Ck. 138.40/3.10/1.75		Lagoon	0.0	0.14	40.0		2.3	8.5
05308018	Morganfield (STP)	Lost Ck. 138.40/6.20/0.60		Trickling Filter	0.0	0.35	31.0		6.0	4.0
05408021	Peabody Coal Co. #2	Highland Ck. 139.60/25.0/1.50/1.20		Extended Aeration	0.0	0.02	24.0		2.25	4.0
05508021	Camp Breckinridge (STP)	Highland Ck. 139.60/20.53/4.40/1.10		Activated Sludge	0.0	0.45	143.0		15.0	4.0
05608023	Swope Trailer Park	Canoe Ck. 174.60/4.07		Extended Aeration	0.0	0.0025	24.0		2.25	4.0
05708023	Carriage Mobile Home	Canoe Ck. 174.60/4.20/7.30/1.90/0.25/0.43		Extended Aeration	0.0	0.015	24.0		2.25	4.0
05808023	Cairo Elem. School	Canoe Ck. 174.60/7.70/3.20/0.70/0.20		Extended Aeration	0.0	0.003	24.0		2.25	4.0
05908024	Medley Dist., Stanley	Fulkerson Ditch 212.40/4.60		Extended Aeration	0.0	0.01	0.0		0.0	4.0
06208025	E. H. Richmond Subd.	Yellow Ck. 229.40/1.0/1.30/0.66/0.18		Extended Aeration	0.0	0.05	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
06308025	Woodlawn Trailer Park	Yellow Ck. 229.40/0.63		Extended Aeration	0.0	0.008	24.0		2.25	4.0
06408025	Hillcrest Trailer Park	Yellow Ck. 229.40/1.85/0.45		Extended Aeration	0.0	0.006	24.0		2.25	4.0
06508025	Town & Country Trailer Park	Yellow Ck. 229.40/2.30/0.50		Extended Aeration	0.0	0.005	24.0		2.25	4.0
06608025	Lloyds Mechanical	Yellow Ck. 229.40/5.30		Extended Aeration	0.0	0.005	24.0		2.25	4.0
06708025	Colony Mobile Home Village	Yellow Ck. 229.40/2.50/0.42		Extended Aeration	0.0	0.02	24.0		2.25	4.0
06808025	Graham Estates Subd.	Yellow Ck. 229.40/2.50/0.38		Extended Aeration	0.0	0.015	24.0		2.25	4.0
06908025	Thruston School	Yellow Ck. 229.40/1.90		Extended Aeration	0.0	0.006	24.0		2.25	4.0
07208026	Maceo Elem. School	Pup Ck. 230.70/0.50/3.70		Extended Aeration	0.0	0.003	24.0		2.25	4.0
07308026	Midsouth Home Sites	Pup Ck. 230.70/2.0/0.60		Extended Aeration	0.0	0.01	24.0		2.25	4.0
07408026	Trail-A-Way Trailer Park	Pup Ck. 230.70/1.50/1.10		Extended Aeration	0.0	0.005	24.0		2.25	4.0
07508928	American Olean Tile	Unnamed Tributary 241.20/2.70		Extended Aeration	0.0	0.007	24.0		2.25	4.0
07608029	Martin Marietta Aluminum	Yellow Ck. 244.80/1.50		Chemical Precip. & Settling	0.0	5.7	32.4		0.0	4.0
07708029	Rest Haven Convalescent Home	Yellow Ck. 244.80/4.50/0.53		Extended Aeration	0.0	0.006	24.0		2.25	4.0
07808029	Hancock County Branch Bank	Yellow Ck. 244.80/4.50/0.53		Extended Aeration	0.0	0.0005	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
07908030	Windward Heights Subd.	Lead Ck. 257.20/6.70/0.06/0.60		Extended Aeration	0.0	0.032	24.0		2.25	4.0
08208035	Hardinsburg (STP)	Sinking Ck. 280.50/8.90/11.04		Trickling Filter	0.0	0.11	91.0		12.0	4.0
08308043	Doe Valley Corp.	Doe Run 339.20/1.40/0.20		Extended Aeration	5.2	0.045	24.0		2.3	3.0
08408044	Vine Grove (STP)	Otter Ck. 345.0/17.17/1.20		Trickling Filter	4.0	0.09	31.0		6.0	4.0
08508045	Forrest Hill Subd.	Mill Ck. & Mill Ck. Cut-off 365.10/2.24/4.0		Extended Aeration	0.0	0.30	24.0		2.25	4.0
08608045	Timothy Hill Subd.	Mill Ck. & Mill Ck. Cut-off 355.90/4.35/1.10/1.60		Extended Aeration	0.0	0.10	24.0		2.25	4.0
08708045	Valley Village San. Corp.	Mill Ck. & Mill Ck. Cut-off 355.90/0.90		Extended Aeration	0.0	0.50	24.0		2.25	4.0
08808045	Havalock Subd.	Mill Ck. & Mill Ck. Cut-off 365.10/2.24/3.30		Extended Aeration	0.0	0.090	24.0		2.25	4.0
08908045	West Springfield Subd.	Mill Ck. & Mill Ck. Cut-off 365.10/2.24/3.82		Extended Aeration	0.0	0.10	24.0		2.25	4.0
09208045	Ford Haven Subd.	Mill Ck. & Mill Ck. Cut-off 365.10/2.24/3.70		Extended Aeration	0.0	0.15	24.0		2.25	4.0
09308045	Villa Anna Subd.	Mill Ck. & Mill Ck. Cut-off 355.90/4.35/1.10/0.70		Extended Aeration	0.0	0.169	24.0		2.25	4.0
09408045	Valley High School	Mill Ck. & Mill Ck. Cut-off 355.90/4.35/0.60		Imhoff Tank & Trickling Filter	0.0	0.056	36.0		6.0	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
09508045	Woodhaven Medical School	Mill Ck. & Mill Ck. Cut-off 355.90/4.35/1.10/ 1.69/0.30		Extended Aeration	0.0	0.10	24.0		2.25	4.0
09608046	E.I. Dupont (Louisville)	Paddy Run 368.30/0.40		Primary	0.0	43.2	0.0		0.0	4.0
09708046	Reynolds Metal (Louisville)	Paddy Run 368.30/1.20		Primary plus Secondary	0.0	1.062	0.0		0.0	4.0
09808047	Ormsby Village, Anchorage	Beargrass Ck. 379.40/1.60/12.30		Lagoon	0.0	0.05	48.0		2.25	8.5
09908047	Middletown Elem. School	Beargrass Ck. 379.40/1.60/12.80/ 1.80/0.50		Extended Aeration	0.0	0.01	24.0		2.25	4.0
10208047	Foxboro Manor Subd.	Beargrass Ck. 379.40/1.60/12.80/ 0.20		Extended Aeration	0.0	0.125	24.0		2.25	4.0
10308047	Douglass Hills Subd.	Beargrass Ck. 379.40/1.60/12.80/ 1.50		Extended Aeration	0.0	0.525	24.0		2.25	4.0
10408047	Village Square Shop Center	Beargrass Ck. 379.40/1.60/12.80/ 2.0		Extended Aeration	0.0	0.0065	24.0		2.25	4.0
10508047	University of Louisville, School of Music	Beargrass Ck. 379.40/1.60/12.80/ 2.0		Extended Aeration	0.1	0.027	24.0		2.25	4.0
10608047	Klarer, Louisville	Beargrass Ck. 379.40/1.10/2.90		Extended Aeration	0.1	0.9	0.0		0.0	4.0
10708047	Louisville County Club	Beargrass Ck. 379.40/0.60		Septic Tank & Sand Filter	0.0	0.013	24.0		1.5	4.0
10808048	New Market Subd.	Unnamed Tributary 382.8/2.10/0.35		Extended Aeration	0.0	0.08	24.0		2.25	4.0
10908048	Holiday Inn	Unnamed Tributary 382.8/2.30/0.48		Extended Aeration	0.0	0.052	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
11208048	Glenview Hill Subd.	Unnamed Tributary 382.8/1.0/0.50		Extended Aeration	0.0	0.0612	24.0		2.25	4.0
11308049	Thorn Hill Subd.	Goose Ck. 384.50/2.36/0.80		Extended Aeration	0.0	0.133	24.0		2.25	4.0
11408049	Central State Hospital	Goose Ck. 384.50/9.50		Extended Aeration	0.0	0.34	24.0		2.25	4.0
11508049	Green Spring Subd.	Goose Ck. 384.50/0.50/2.70		Extended Aeration	0.0	0.060	24.0		2.25	4.0
11608049	Murray Hill Subd.	Goose Ck. 384.50/0.50/6.20/ 0.22		Extended Aeration	0.0	0.32	24.0		2.25	4.0
11708049	Barbor Manner Subd.	Goose Ck. 384.50/0.50/3.80/ 0.20		Extended Aeration	0.0	0.05	24.0		2.25	4.0
11808049	Kentucky Children Home, Lyndon	Goose Ck. 384.50/7.40		Imhoff Tank & Trickling Filter	0.0	0.05	36.0		6.0	4.0
11908049	Westcreek Apts.	Goose Ck. 384.50/6.80		Extended Aeration	0.0	0.10	24.0		2.25	4.0
12208049	Bancroft Subd.	Goose Ck. 384.50/5.50		Extended Aeration	0.0	0.08	24.0		2.25	4.0
12308049	Plantation Subd.	Goose Ck. 384.50/6.45/0.80		Activated Sludge	0.0	0.115	24.0		6.0	4.0
12408049	Old Brownsboro Place Subd.	Goose Ck. 384.50/4.70		Extended Aeration	0.0	0.05	24.0		2.25	4.0
12508049	Rolling Hills Subd.	Goose Ck. 384.50/8.60		Extended Aeration	0.0	0.585	24.0		2.25	4.0
12608049	Spring Valley Estates	Goose Ck. 384.50/4.0		Extended Aeration	0.0	1.0	24.0		2.25	4.0
12708050	Hunting Ck. North Subd.	Harrods Ck. 385.60/1.60/1.20		Extended Aeration	0.0	0.118	24.0		2.25	4.0
12808050	Hunting Ck. South Subd.	Harrods Ck. 385.60/1.60/0.65		Extended Aeration	0.0	0.228	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
12908050	Hite Ck. (STP)	Harrods Ck. 385.60/6.10/ 1.40/1.93		Tertiary	0.0	1.6	9.9		0.0	4.0
13208050	Timberlake Subd.	Harrods Ck. 385.60/2.60/0.20		Extended Aeration	0.0	0.008	24.0		2.25	4.0
13308050	Willow Ck. Subd.	Harrods Ck. 385.60/6.10/2.30/ 1.60		Extended Aeration	0.0	0.07	24.0		2.25	4.0
13408050	Oldham Co. Stone Crestwood	Harrods Ck. 385.60/6.10/2.70/ 1.80/0.50		Contact Stabilization	0.0	0.05	24.0		7.5	4.0
13508050	Cross Keys Development	Harrods Ck. 385.60/6.10/5.30/ 0.40/1.20		Extended Aeration	0.0	0.0021	24.0		2.25	4.0
13608050	M.A. Stoess & Sons Subd.	Harrods Ck. 385.60/6.10/5.30/ 1.30/0.10		Extended Aeration	0.0	0.005	24.0		2.25	4.0
13708051	Clayton & Lambert Mfg.Co.	Harrods Ck. 385.60/12.40/5.38		Extended Aeration	0.0	0.0512	0.0		0.0	4.0
13808051	Oldham County High School	Harrods Ck. 385.60/12.40/5.38		Extended Aeration	0.0	0.015	24.0		2.25	4.0
13908051	St. Francis School	Harrods Ck. 385.60/9.10/1.30		Extended Aeration	0.0	0.008	24.0		2.25	4.0
14208051	Texaco Service Station	Harrods Ck. 385.60/12.40/1.20/ 0.76/2.70		Extended Aeratin	0.0	0.001	24.0		2.25	4.0
14308052	Highway Maintenance Building	Harrods Ck. 385.60/17.30/2.30		Extended Aeration	0.0	0.001	24.0		2.25	4.0
14408052	Kentucky State Reformatory for Men	Harrods Ck. 385.60/17.30/0.30/ 2.30		Trickling Filter	0.0	0.432	48.0		12.0	4.0
14508052	La Grange (STP)	Harrods Ck. 385.60/20.80/ 1.60/1.87		Trickling Filter	0.0	0.22	40.0		12.0	2.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
14608052	Anaconda Wire & Cable	Harrods Ck. 385.60/23.20/3.60		Extended Aeration	0.0	0.1263	0.0		0.0	4.0
14708065	Warsaw (STP)	Dry Ck. 451.50/1.20/1.0		Lagoon	0.0	0.0	0.0		0.0	0.0
14808066	Sugar Bay Restaurant	Little Sugar Ck. 458.70/0.60		Extended Aeration	0.0	0.001	24.0		2.25	4.0
14908066	Sun Oil Co. Service Station	Little Sugar Ck. 458.70/2.9/1.10/ 0.25		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
15208068	Big Bone Mobile Home Park & Grill	Big Bone Ck. 464.80/4.90/0.10/ 0.12		Extended Aeration	0.0	0.01	24.0		2.25	4.0
15308068	Texaco Service Station	Big Bone Ck. 464.80/2.40/ 5.90/3.30/1.70		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
15408068	Sunoco Service Station	Big Bone Ck. 464.80/2.40/ 5.90/1.25/1.50		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
15508068	Walton-Verona High School	Big Bone Ck. 464.80/2.40/5.90/ 3.30/1.40/0.40		Extended Aeration	0.0	0.01	24.0		2.25	4.0
15608068	Sun Oil Co. Service Station, KY14 & I71	Big Bone Ck. 464.80/2.40/5.90/ 3.30/1.20		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
15708068	Baker's, Elmo, Boone Inn	Big Bone Ck. 464.80/2.40/5.90/ 3.30/0.90/0.40		Extended Aeration	0.0	0.005	24.0		2.25	4.0
15808068	Baron Oil Truck Plaza	Big Bone Ck. 464.80/2.40/11.98/ 0.12/1.77		Extended Aeration & Lagoon	0.0	0.025	16.8		2.25	8.5
15908068	Days Inn Motel & Restaurant	Big Bone Ck. 464.80/2.40/11.98/ 0.12/1.70		Extended Aeration	0.0	0.02	24.0		2.25	4.0
16208068	Standard Oil Service Station	Big Bone Ck. 464.80/2.40/4.0/ 1.10/0.50		Extended Aeration	0.0	0.001	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
16308068	Big Bone Lick State Park	Big Bone Ck. 464.80/5.0		Extended Aeration	0.0	0.04	24.0		2.25	4.0
16408068	Walton (STP)	Big Bone Ck. 464.80/2.40/5.90/3.30/0.90/0.04		Extended Aeration	0.0	0.0	0.0		0.0	0.0
16508071	Richwood Villa Anna Mobile Home	Gunpowder Ck. 467.90/15.0/7.60		Extended Aeration	0.0	0.09	24.0		2.25	4.0
16608071	Florence (STP)	Gunpowder Ck. 467.90/15.0/4.10/0.90		Extended Aeration & Trickling Filter	0.0	1.45	25.0		15.0	5.0
16708071	Kentucky Int'l. Raceway	Gunpowder Ck. 467.90/15.0/4.50/1.30		Yeoman Type	0.0	0.022	24.0		2.25	4.0
16808073	Burl Parks Subd.	Woolper Ck. 481.60/7.20/4.30		Extended Aeration	0.0	0.03	24.0		2.25	4.0
16908073	Hickory Hill Subd.	Woolper Ck. 481.60/7.20/3.70/1.10		Extended Aeration	0.0	0.03	24.0		2.25	4.0
17208073	Boone Creek Subd.	Woolper Ck. 481.60/7.20/5.10/0.20		Extended Aeration	0.0	0.05	24.0		2.25	4.0
17308076	Hebron Elem. School	Elijah's Ck. 499.50/2.30/0.80		Imhoff Tank & Trickling Filter	0.0	0.02	36.0		6.0	4.0
17408076	Chester Goodridge Elem. School	Elijah's Ck. 499.50/3.20/0.90		Extended Aeration	0.0	0.01	24.0		2.25	4.0
17508076	Greater Cincinnati Airport	Elijah's Ck. 499.50/4.40/0.20		Extended Aeration	0.0	0.06	24.0		2.25	4.0
17608077	Kentucky Jockey Club	Dry Ck. 503.90/3.10/2.20/0.90		Rated Aeration	0.0	0.042	24.0		6.0	4.0
17708977	Park Hill (STP)	Sleepy Hollow Ck. 507.50/0.20/1.30		Trickling Filter	0.0	0.13	31.0		6.0	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
17808078	Gejmann Bros. Subd.	Four Mile Ck. 520.20/9.20		Extended Aeration	0.0	0.022	24.0		2.25	4.0
17908078	Alexandria High School	Four Mile Ck. 520.20/9.20		Extended Aeration	0.0	0.024	24.0		2.25	4.0
18208078	Douglas Subd.	Four Mile Ck. 520.20/3.80/2.80/0.80/0.20		Extended Aeration	0.0	0.019	24.0		2.25	4.0
18308078	Newport National Bank	Four Mile Ck. 520.20/3.80/2.80/1.40		Extended Aeration	0.0	0.0005	24.0		2.25	4.0
18408078	Schabell Motel	Four Mile Ck. 520.20/3.0/2.60		Extended Aeration	0.0	0.005	24.0		2.25	4.0
18508078	St. Joseph Parish Convent	Four Mile Ck. 520.20/0.30/1.50/0.30		Extended Aeration	0.0	0.007	24.0		2.25	4.0
18608078	Crestview (STP)	Four Mile Ck. 520.20/2.30/1.75		Trickling Filter	0.0	0.07	20.0		2.3	4.0
18708080	Alexandria (STP)	Twelve Mile Ck. 530.0/3.50/1.60		Contact Stabilization	0.0	0.26	24.0		2.3	4.0
18808085	Brooksville (STP)	Locust Ck. 548.60/8.90/1.50		Contact Stabilization	0.0	0.125	20.0		7.5	4.0
18908085	Kerns Meat Processing	Locust Ck. 548.60/4.10/3.80/0.80/0.90		Septic Tank & Sand Filter	0.0	0.0003	24.0		1.5	4.0
19208087	Chatham Rest Home	Bracken Ck. 555.0/3.24/5.10		Extended Aeration	0.0	0.005	24.0		2.25	4.0
19308087	Bracken Center Apts.	Bracken Ck. 555.0/3.24/2.30/1.30		Extended Aeration	0.0	0.006	24.0		2.25	4.0
19408087	Clopay	Bracken Ck. 555.0/2.20		Cooling Water	0.0	0.45	0.0		0.0	4.0
19508089	Simon Kenton Subd.	Lawrence Ck. 566.60/7.40/1.20		Extended Aeration	0.0	0.32	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L) Flow (mgd)	BOD_5	SS	NH_3	DO
19608089	Dr. Tenery Residence	Lawrence Ck. 566.60/5.30		Extended Aeration	0.0	0.005	24.0		2.25	4.0
19708089	Kentucky Department of Highway	Lawrence Ck. 566.60/7.90		Extended Aeration	0.0	0.001	24.0		2.25	4.0
19808089	Ashland Service Station	Lawrence Ck. 566.60/7.40/1.56/1.0		Extended Aeration	0.0	0.0005	24.0		2.25	4.0
19908089	Parker Tobaco Co.	Lawrence Ck. 566.60/7.40/0.50		Extended Aeration	0.0	0.015	24.0		2.25	4.0
20208089	Washington Methodist Church	Lawrence Ck. 566.60/7.40/1.56/0.55		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
20308089	Maysville Community College	Lawrence Ck. 566.60/7.40/1.53		Extended Aeration	0.0	0.012	24.0		2.25	4.0
20408089	Maysville Vocations School	Lawrence Ck. 566.60/7.87		Extended Aeration	0.0	0.003	24.0		2.25	4.0
20508089	Mason County High School	Lawrence Ck. 566.60/8.04		Extended Aeration	0.0	0.01	24.0		2.25	4.0
20608089	Mason County High School Bus Garage	Lawrence Ck. 566.60/7.98		Extended Aeration	0.0	0.0005	24.0		2.25	4.0
20708089	Mason County Middle School	Lawrence Ck. 566.60/8.20		Extended Aeration	0.0	0.005	24.0		2.25	4.0
20808089	Mason County San. Dist. #2	Lawrence Ck. 566.60/7.0		Extended Aeration	0.0	0.05	24.0		2.25	4.0
20908089	Mason County San. Dist. #1	Lawrence Ck. 566.60/7.70		Extended Aeration	0.0	0.03	24.0		2.25	4.0
21208089	Central Center Shopping	Lawrence Ck. 566.60/7.53		Extended Aeration	0.0	0.03	24.0		2.25	4.0
21308090	Bon Haven Subd.	Limestone Ck. 573.0/0.88/1.10/0.40		Extended Aeration	0.0	0.008	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
21408090	Pinewood Subd.	Limestone Ck. 573.0/2.39/0.12/0.70		Extended Aeration	0.0	0.017	24.0		2.25	4.0
21508090	Wald Mfg.	Limestone Ck. 573.0/0.78		Recycle CN Destr. Precip.	0.0	0.3377	40.1		0.0	4.0
21608090	Mefford Hill	Limestone Ck. 573.0/0.88/1.70		Extended Aeration	0.0	0.008	24.0		2.25	4.0
21708091	Tollesboro High School	Cabin Ck. 578.50/12.60/0.60		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
21808091	Tollesboro Elem. School	Cabin Ck. 578.50/14.60/1.60		Septic Tank & Sand Filter	0.0	0.0024	24.0		1.5	4.0
21908095	Garrison School	Kinniconick Ck. 613.20/1.50		Extended Aeration	0.0	0.0021	24.0		2.25	4.0
22208100	Grays Branch Elem. School	Grays Branch 639.0/2.35/0.65		Septic Tank & Sand Filter	0.0	0.0042	24.0		1.5	4.0
22308103	Wurtland (STP)	Uhlens Run 648.60/0.70		Extended Aeration	0.0	0.10	24.0		2.3	4.0
22408104	Raceland (STP)	Pond Run & Chinns Branch 650.40/1.64		Primary	0.0	0.15	143.0		15.0	4.0
22508105	Ashland Plaza	White Oak Ck. 655.50/1.52/0.20		Extended Aeration	0.0	0.014	24.0		2.25	4.0
22608105	Greenup Mall Inc.	White Oak Ck. 655.50/1.52/0.20		Extended Aeration	0.0	0.022	24.0		2.25	4.0
22708106	Oakwood Mobile Home Trailer Park	Hood Ck. 657.40/5.90		Extended Aeration	0.0	0.0025	24.0		2.25	4.0
22808106	Green Acres Trailer Park	Hood Ck. 657.40/5.10/0.70		Extended Aeration	0.0	0.009	24.0		2.25	4.0
22908106	Ashland St. Voc. Tech. School	Hood Ck. 657.40/0.76/4.80		Extended Aeration	0.0	0.012	24.0		2.25	4.0
23208106	Air Product & Chemical	Hood Ck. 657.40/0.41		Septic Tank-Chlorination	0.0	0.053	0.0		0.0	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
23308106	National Mine Service	Hood Ck. 657.40/0.45		Extended Aeration	0.0	0.007	24.0		2.25	4.0
23408106	Ashland Oil Service Station	Hood Ck. 657.40/0.76		Extended Aeration	0.0	0.001	24.0		2.25	4.0
23508106	Humble Oil Service Station	Hood Ck. 657.40/0.80		Extended Aeration	0.0	0.0015	24.0		2.25	4.0
23608106	Breezeland Swim Club	Hood Ck. 657.40/0.76/3.30		Extended Aeration	0.0	0.005	24.0		2.25	4.0
23708108	Catletts Ck. Elem. School	Catletts Ck. 664.0/3.10		Extended Aeration	0.0	0.0075	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L) Flow (mgd)	BOD_5	SS	NH_3	DO
23810002	Sturgis (STP)	Cypress Ck. 108.0/7.14/3.27/0.30		Lagoon	0.0	0.44	15.0		2.3	8.5
23910002	Bills Truck Stop	Cypress Ck. 108.0/7.14/2.60/0.55		Extended Aeration	0.0	0.002	24.0		2.25	4.0
24210002	O'Nan Trailer Park	Cypress Ck. 108.0/7.14/4.96/1.10/0.20		Extended Aeration	0.0	0.0075	24.0		2.25	4.0
24310003	Hudson's Restaurant & Motel	Tradewater River 108.0/11.30/1.30/0.55		Extended Aeration	0.0	0.005	24.0		2.25	4.0
24410004	Clay (STP)	Vaughn Ditch 108.0/16.71/6.70/0.10		Primary	0.0	0.16	143.0		15.0	4.0
24510004	Dixon Elem. School	Vaughn Ditch 108.0/16.71/7.61/7.15/1.30/1.90		Extended Aeration	0.0	0.006	24.0		2.25	4.0
24710005	Alexandria Stone	Tradewater River 108.0/19.48/4.30/1.10		Pit Water	0.0	0.10	0.0		0.0	0.0
24810006	Providence (STP)	Owens Ck. 108.0/40.80/2.40/0.19		Trickling Filter	0.0	0.115	41.0		12.0	4.0
24910008	County Meadows Subd.	Clear Ck. 108.0/45.80/7.40/2.50/0.60		Extended Aeration	0.0	0.025	24.0		2.25	4.0
25210008	Nebo High School	Clear Ck. 108.0/45.80/7.40/3.60/2.90/0.70		Septic Tank & Sand Filter	0.0	0.0035	24.0		1.5	4.0
25310008	W. Hopkins High School	Clear Ck. 108.0/45.80/10.20/1.60		Extended Aeration	0.0	0.0075	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L) Flow (mgd)	BOD_5	SS	NH_3	DO
25410008	Pittsburg & Mid-way Coal Co.	Clear Ck. 108.0/45.80/15.19/ 1.40/0.37		Extended Aeration	0.0	0.004	24.0		2.25	4.0
25510009	Earlington (STP)	Clear Ck. 108.0/45.80/25.60		Trickling Filter	0.0	0.012	23.0		12.0	4.0
25610009	Chateau Mibile Home Park	Clear Ck. 108.0/45.80/24.35/ 0.70/0.30		Extended Aeration	0.0	0.016	24.0		2.25	4.0
25710011	Frank Youngs Subd.	Flynn Fork 108.0/78.10/12.02/ 0.24/3.25/1.10/0.70		Extended Aeration	0.0	0.02	24.0		2.25	4.0
25810012	Dawson Springs (STP)	Tradewater River 108.0/90.60		Trickling Filter	0.0	0.17	4.0		12.0	4.0
25910012	4-H Camp for Univ. of Kentucky	Tradewater River 108.0/86.99/1.30		Septic Tank & Sand Filter	0.0	0.01	24.0		1.5	4.0
26210014	Pennyrille State Park	Tradewater River 108.0/32.22/1.20/ 6.0		Extended Aeration	0.0	0.005	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
26311001	Greenup County Voc. School	Tygarts Ck. 628.20/1.80		Extended Aeration	0.2	0.0082	24.0		2.25	4.0
26411003	Sunshine Elem. School	Little White Oak Ck. 628.20/6.40/0.30/0.40		Septic Tank & Sand Filter	0.0	0.0042	24.0		1.5	4.0
26511005	Carter City Consolidated School	Buffalo Ck. 628.20/45.70/7.1		Extended Aeration	0.0	0.0021	24.0		2.25	4.0
26611006	Olive Hill (STP)	Tygarts Ck. 628.20/77.70		Extended Aeration	0.0	0.15	31.0		6.0	4.0
26711006	West Carter County High School	Tygarts Ck. 628.20/76.10		Trickling Filter	0.0	0.007	24.0		2.25	4.0
26811006	Standard Oil Service Station	Tygarts Ck. 628.20/73.40/0.50/0.30		Extended Aeration	0.0	0.001	24.0		1.5	4.0
26911006	Lawton Elem. School	Tygarts Ck. 628.20/80.70/1.90/0.10		Septic Tank & Sand Filter	0.0	0.0025	24.0		2.25	4.0
27211006	Carter Caves State Park	Tygarts Ck. 628.20/65.30/1.38		Extended Aeration	0.0	0.001	24.0		2.25	4.0
27311006	Upper Tygarts Jr. High School	Tygarts Ck. 628.20/85.10/0.50		Extended Aeration	0.0	0.002	24.0		2.25	4.0

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q7-10 (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
27408200	Semet Solvay	Ohio River 662.4	KY0000558	Cooling Water	9900	3.0				
27508201	Ashland (STP)	Ohio River 659.0		Primary	9900	3.75	194.0		140.0	
27608201	Armco	Ohio River 655.90	KY0000485	Primary & Cooling	9900	30.51			0.766	
27708201	Mansbach	Ohio River 659.3				0.024				
27808202	Flatwoods (STP)	Ohio River 653.50		Primary	9900	0.75	143.0		15.0	
27908202	Worthington (STP)	Ohio River 650.40		Extended Aeration	9900	0.20	24.0		2.3	4.0
28208202	C&O/B&O RR (Greenup)	Ohio River 650.40	KY0000124	Sedimentation-Primary	9900	0.409	83.0			
28308203	E.I. Dupont (Greenup)	Ohio River 646.4	KY0000493	Primary	9900	1.62	56.8			
28408204	South Shore (STP)	Ohio River 627.60		Extended Aeration	9900	0.12	24.0		2.3	4.0
28508205	Vanceburg (STP)	Ohio River 603.0		Extended Aeration	9900	0.09	24.0		4.5	4.0
28608205	Frankfort Material	Ohio River 576.0		Settling	9900	0.16	4.0		1.6	
28708206	Maysville (STP)	Ohio River 569.70		Primary	9900	1.30	220.0		18.0	
28808207	C&O/B&O RR (Silver Grove)	Ohio River 521.90		Fuel & Oil Recycling	12100	0.09	40.0			
28908209	Bromley (STP)	Ohio River 507.40		Primary	12100	15.3	133.0		14.0	
29208211	Dow Corning	Ohio River 440.60	KY0001279	Primary	12100	0.24	999.2			

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
29308211	M&T Chemical	Ohio River 437.90	KY0001431	Primary-Sedimentation	12100	4.32	50.3		45.0	
29408212	Kawneer	Ohio River 428.40	KY0001732	Chemical-Physical	12100	0.72				
29508213	Nugent Sand Co.	Ohio River 379.7	KY0002763	Filter	12100	0.025				
29608214	Louisville (MSD)	Ohio River 369.30		Primary	14300	82.3	135.8		15.0	3.3
29708214	Borden Chemical	Ohio River 366.60	KY0001112	Irr. Spray	14300	1.49	10.7			
29808214	American Synthetic Rubber Co.	Ohio River 368.30/1.70	KY0001589	Aerated Lagoon	14300	2.0				
30308215	Shively (STP)	Ohio River 366.0		Primary	14300	1.19	258.0		15.0	
30408215	Stauffer Chemical	Ohio River 366.50	KY0002780	Primary & Settling	14300	0.43				
30508216	West Point (STP)	Ohio River 350.50		Primary	14300	0.18	142.0		15.0	
30608216	Olin Chemical	Ohio River 338.10	KY0002127	Primary & Settling	14300	28.08	134.76			
30708217	Brandenburg (STP)	Ohio River 335.50		Primary	14300	0.14	142.0		15.0	
30808217	Cloverport (STP)	Ohio River 268.70		Primary	14300	0.12	24.0		2.3	4.0
30908217	Western Kraft	Ohio River 262.10	KY0001716	Primary-Lagoon Settlement	14300	5.86	78.8			

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q_{7-10} (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
31208218	Wescor	Ohio River 260.40	KY0001708	Primary Lagoon, Settlement	14300	2.8				
31308218	Hawesville (STP)	Ohio River 256.90		Contact Stabilization	14300	0.12	24.0		7.5	4.0
31408218	National Aluminum	Ohio River 254.80	KY0002461	Chemical Precip. & Settling	14300	0.114				
31508218	National Southwire Aluminum	Ohio River 253.50	KY0001821	Lagoon & Settling	14300	0.011	163.3			
31608219	Lewisport (STP)	Ohio River 243.0		Contact Stabilization	14300	0.069	24.0		7.5	4.0
31708219	Green River Steel	Ohio River 228.30	KY0001571	Primary	14300	6.075				
31808219	Glenmore Dist.	Ohio River 276.10	KY0001031	Extended Aeration	14300	0.0145	217.5			
31908219	Medley Dist.	Ohio River 223.70	KY0001082	Primary	14300	1.0	10.9			
32208219	Fleishman Dist.	Ohio River 223.40		Primary	14300	1.43	146.7			
32308219	W.R. Grace	Ohio River 230.1	KY0001953	Extended Aeration	14300	2.59	24.0			
32408220	Owensboro (STP)	Ohio River 223.10		Primary	14300	6.3	181.0		15.0	
32508222	Henderson (STP)	Ohio River 175.60		Primary	14300	2.39	125.0		15.0	
32608226	Paducah (STP)	Ohio River 45.40		Primary	48500	3.3	141.0		15.0	

EXHIBIT B-1.4t (Continued) EXISTING DISCHARGE CHARACTERISTICS

Code Number	Facility	Location	NPDES Permit No.	Type of Treatment	Q7-10 (cfs)	Discharge Characteristics (mg/L)				
						Flow (mgd)	BOD_5	SS	NH_3	DO
40008206	Eastern Ky. RECC (Charleston Bottoms)(1)	Ohio River 568.50		Cooling Water	9900					
40108210	Cincinnati Gas & Elec. (East Bend)(2)	Ohio River 471.0		Cooling Water	12100					
40208211	Ky. Utilities (Ghent)	Ohio River 445.0		Cooling Water	12100	23.8				
40308214	Public Service of Ind. (Gallagher)	Ohio River 371.0		Cooling Water	14300	453.9				
40408214	Louisville Gas & Elec. (Paddy Run)	Ohio River 367.4		Cooling Water	14300	91.6				
40508215	Louisville Gas & Elec. (Cane Run)	Ohio River 364.2		Cooling Water	14300	575.5				
40608215	Louisville Gas & Elec. (Mill Creek)	Ohio River 355.0		Cooling Water	14300	91.6				
40708218	Big Rivers RECC (Coleman)	Ohio River 252.6		Cooling Water	14300	151.2				
40808219	Owensboro Municipal Utilities (Elmer Smith #1 and #2)	Ohio River 227.5		Cooling Water	14300	291.0				
40908221	Henderson Utilities	Ohio River 177.0		Cooling Water	14300	40.0				
41008226	TVA (Shawnee)	Ohio River 33.0		Cooling Water	48500	129.2				

(1) Under construction
(2) Proposed

EXHIBIT B1.5t WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
00106001	Greenup (STP)	44.45	.115	24/23	24/23	4/3.8	4		43Ca
00206003	Greenbo Lake State Park	0.71	.002	24/.4	24/.4	4/.1	8		
00306004	Humble Oil Service Station	0.77	.002	24/.4	24/.4	4/.1	8		
00406004	Sunoco Service Station	0.39	.001	24/.2	24/.2	4/.1	8		
00506004	Kentucky Electric Steel	4.64	.012	24/2.4	24/2.4	4/.4	8		
00606004	Cannonsburg Elem & H.S.	2.93	.018	10/1.5	10/1.5	4/.6	8		
00706004	Federal Correctional Institute	16.26	.100	10/8.3	10/8.3	4/3.3	8		
00806004	Fairhill Estates, Inc.	6.18	.016	24/3.2	24/3.2	4/.5	8		
00906004 and 01206004	Miller's Little Giant Food Store and Crisp's Dairy Treat	1.93	.005	24/1	24/1	4/.2	8		
01306004	Hwy. Maintenance Garage	0.39	.001	24/.2	24/.2	4/.1	4		
01406004	Smith Trailer Park	1.55	.004	24/.8	24/.8	4/.1	4		
01506005	Ashland Oil Service Station	0.39	.001	24/.2	24/.2	4/.1	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD5	SS	NH3	DO mg/L	Other	
01606006	Cloverleaf Trailer Park	0.77	.002	24/.4	24/.4	4/.1	8		
01706006 and 01806006	Humble Oil Service Station and Sun Oil Service Station	1.16	.003	24/.6	24/.6	4/.1	8		
01906007	Grayson (STP)	62.61	.385	10/32.1	10/32.1	4/12.8	8		48Ca
02206007	East Carter County H.S.	2.71	.007	24/1.4	24/1.4	4/.2	8		
02306008	Conley's Trailer Park	0.39	.001	24/.2	24/.2	4/.1	8		
02406009	Graham Junior H.S.	0.77	.002	24/.4	24/.4	4/.1	8		
02506010	Celestial Camper Court	0.81	.005	10/.4	10/.4	4/.2	8		
02606012	Hitchens Consol. School	1.14	.007	10/.6	10/.6	4/.2	8		
02706013	Mico Mfg. Co.	0.49	.003	10/.3	10/.3	4/.1	8		
02806013	Elliott County Elem School	1.46	.009	10/.8	10/.8	4/.3	8		
02906013	Lakeside Elem School	1.55	.004	24/.8	24/.8	4/.1	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day) Flow mgd	BOD5	SS	NH3	DO mg/L	Other	Priority
03208001	Fin & Feather Lodge	21.14	.130	10/10.8	10/10.8	4/4.3	8		
03308001	La Center (STP)	18.38	.113	10/9.4	10/9.4	4/3.8	8		213Ca
03408001	Bandana Elem School	0.65	.004	10/.3	10/.3	4/.1	8		
03508001	Ballard Co. H.S.	3.87	.01	24/.8	24/.8	4/.1	8		
03608002	Kevil (STP)	6.50	.04	10/3.3	10/3.3	4/1.3	8		49C-
03708005	A.E.C. Paducah	-	3.5	-	-	-	8		
03808005	Forrestdale School	1.16	.003	24/.6	24/.6	4/.1	8		
03908906	Essex Wire Corp.	3.15	.007	24/1.4	24/1.4	4/.2	4		
04208007	Paducah Realty	1.55	.004	24/.8	24/.8	4/.1	8		
04308007	Heath Upper Elem & H.S.	4.25	.011	24/2.2	24/2.2	4/.4	8		
04408008 and 04508008	McCracken #1 and McCracken #2	64.56 233.29	.167 .333	10/13.9 10/27.8	10/13.9 10/27.8	4/5.6 4/ 11.1	8 8		268C-
04608012	W. KY Youth Camp	1.78	.005	10/.4	10/.4	4/.2	8		
04708013	Marion (STP)	73.58	.34	24/68.1	24/68.1	4/11.3	8		37C-
04808015	Buffalo Br. Trailer Park	1.16	.003	24/.6	24/.6	4/.1	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
04908915	Island Creek Coal Co.	0.77	.002	24/.4	24/.4	4/.1	8		
05208018	Uniontown (STP)	28.13	.173	10/14.4	10/14.4	4/5.8	8		660C-
05508021 and 05300818	Camp Breckinridge- Morganfield (STP)	243.95	1.5	10/125.1	10/125.1	4/50	8		3442Ca
05408021	Peabody Coal #2	3.25	.02	10/1.7	10/1.7	4/.7	8		
05608023	Swope Trailer Park	1.16	.003	24/.6	24/.6	4/.1	4		
05708023	Carriage Mobile Home	2.44	.015	10/1.3	10/1.3	4/.5	8		
05808023	Cairo Elem School	0.49	.003	10/.3	10/.3	4/.1	8		
05908024	Medley Distillery	0.00	.026	-	-	-	8		
06208025	E.H. Richmond Subd	8.62	.063	10/4.4	10/4.4	4/1.8	8		
06308025	Woodlawn Trailer Park	1.46	.009	10/.8	10/.8	4/.3	8		
06408025	Hillcrest Trailer Park	1.14	.007	10/.6	10/.6	4/.2	8		
06508025	Town & Country Trailer Park	3.42	.021	10/1.8	10/1.8	4/.7	8		
06608025	Lloyds Mechanical	0.81	.005	10/.4	10/.4	4/.2	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
06708025	Colony Mobile Home Village	3.42	.021	10/1.8	10/1.8	4/.7	8		
06808025	Graham Estates Subd	2.60	.016	10/1.3	10/1.3	4/.5	8		
06908025	Thruston School	1.14	.007	10/.6	10/.6	4/.2	8		
07208026	Maceo Elem School	0.49	.003	10/.2	10/.2	4/.1	8		
07308026	Mid South Homes	1.79	.011	10/.9	10/.9	4/.4	8		
07408026	Trail-A-Way Trailer Park	0.81	.005	10/.4	10/.4	4/.2	8		
07508928	American Olean Tile	1.30	.008	10/.7	10/.7	4/.3	8		
07608029	Martin Marrietta	1073.36	6.6	10/90	10/132	4/ —	8	oil & grease 0.8/45	
07708029 and 07808029	Rest Haven Conv. Home and Hancock County Branch Bank	1.14	.007	10/.6	10/.6	4/.2	8		
07908030	Windwood Heights Subd.	5.53	.034	10/2.8	10/2.8	4/1.1	8		
08208035	Hardinsburg (STP)	26.02	.16	10/13.3	10/13.3	4/5.3	8		445Ca
08308043	Doe Run San. Corp.	92.77	.24	24/48	24/48	4/8	8		
08408044	Vine Grove (STP)	63.43	.39	10/32.5	10/32.5	4/13	8		152Ca
08508045	Forrest Hill Subd	120.99	.313	10/26.1	10/26.1	4/10.4	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD5	SS	NH3	DO mg/L	Other	
08608045	Timothy Hills Subd	40.20	.104	10/8.7	10/8.7	4/3.5	8		
08708045	Valley Village San. Corp.	84.89	.522	10/43.5	10/43.5	4/17.4	8		
08808045	Hanalock Subd	36.34	.094	10/7.8	10/7.8	4/3.1	8		
08908045	West Springfield Subd	40.20	.104	10/8.7	10/8.7	4/3.5	8		
09208045	Ford Haven Subd	60.69	.157	10/13.1	10/13.1	4/5.2	8		
09308045	Villa Anna Subd	68.63	.176	10/14.7	10/14.7	4/5.9	8		
09408045	Valley High School	22.42	.056	10/4.7	10/4.7	4/1.9	8		
09508045	Woodhaven Medical School	40.20	.104	10/8.7	10/8.7	4/3.5	8		
09608046	E.I. Dupont	0.00	48.8	-	-	-	8	Cr 0.02/- Zn 0.17/-	
09708046	Reynolds Metal	0.00	1.2	-	-	-	8	Al 5/- Oil & grease 10/-	
09808047	Omsby Village	20.10	.052	24/10.4	24/10.4	4/1.7	4		
09908047	Middletown Elem School	3.87	.01	24/2	24/2	4/.3	8		
10208047	Foxboro Manor Subd	50.25	.130	24/26	24/26	4/4.3	4		
10308047	Douglas Hills Subd	211.83	.548	24/109.7	24/109.7	4/18.3	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD$_5$	SS	NH3	DO mg/L	Other	
10408047	Village Square Shopping Center	2.7	.007	24/1.4	24/1.4	4/.2	8		
10508047	U.L. School of Music	10.82	.028	24/5.6	24/5.6	4/.9	4		
10608047	Klarar	0.01	1.02	-	-	-	4	Cr 1.0/- Zn 0.5/- Cl 0.2/-	
10708047	Louisville Country Club	4.63	.013	24/2.6	24/2.6	4/.4	4		
10808048	Newmarket Subd	13.50	.083	10/6.9	10/6.9	4/2.8	8		
10908049	Holiday Inn	20.87	.054	10/4.5	10/4.5	4/1.8	8		
11208049	Glenview Hill Subd	10.41	.064	10/5.3	10/5.3	4/2.1	8		
11308049	Thorn Hill Subd	22.61	.139	10/11.6	10/11.6	4/4.6	8		
11408049	Central State Hosp.	57.73	.355	10/29.6	10/29.6	4/11.8	8		
11508049	Green Spring Subd	24.35	.063	24/12.6	24/12.6	4/2.1	4		
11608049	Murry Hill Subd	54.32	.334	10/27.9	10/27.9	4/11.1	8		
11708049	Barbor Mannor Subd	20.10	.052	24/10.4	24/10.4	4/4.3	4		
11808049	KY Children's Home	20.10	.052	24/10.4	24/10.4	4/4.3	4		
11908049	Westcreek Apt.	16.91	.104	10/8.7	10/8.7	4/3.5	8		
12208049	Bancroft Subd	32.47	.084	24/16.8	24/16.8	4/2.8	4		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
12308049	Plantation Subd	19.68	.121	10/10.1	10/10.1	4/4	8		
12408049	Old Brownboro Place Subd	20.10	.052	24/10.4	24/10.4	4/4.3	4		
12508049	Rolling Hills Subd	99.37	.611	10/51	10/51	4/20.4	8		
12608049	Spring Valley Estates	40.20	.104	24/20.8	24/20.8	4/8.7	4		
12708050	Hunting Creek North Subd	47.55	.123	24/24.6	24/24.6	4/4.1	8		
12808050	Hunting Creek South Subd	92.00	.238	24/47.6	24/47.6	4/7.9	4		
12908050	Louisville - Hite Creek (STP)	198.16	1.6	10/133.4	10/133.4	4/53.4	8		433Aa
13208050	Timberlake Subd	3.09	.008	24/1.6	24/1.6	4/.3	4		
13308050	Willow Creek Subd	28.22	.073	24/14.6	24/14.6	4/2.4	8		
13408050	Oldham Co. Stone	8.46	.052	10/4.3	10/4.3	4/1.7	8		
13508050	Cross Keys Development	0.77	.002	24/.4	24/.4	4/.1	8		
13608050	M.A. Stoess & Son Subd	1.93	.005	24/1	24/1	4/.2	8		
13708051	Clayton & Lambert Mfg. Co.	0.00	.058	-	-	-	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
13808051	Oldham Co. H.S.	6.57	.017	24/3.4	24/3.4	4/.6	8		
13908051	St. Francis School	3.48	.009	24/1.8	24/1.8	4/.3	8		
14208051	Texaco Service Station	0.39	.001	24/.2	24/.2	4/.1	8		
14308052	Hwy. Maintenance Building	0.39	.001	24/.2	24/.2	4/.1	8		
14408052	KY State Reformatory for Men	78.71	.484	10/40.4	10/40.4	4/16.1	8		
14508052	LaGrange (STP)	37.40	.23	10/19.2	10/19.2	4/7.7	8		1425Ca
14608052	Anaconda Wire & Cable	0.00	.144	-	-	-	8	Cr 1/- Zn .5/- Cl .2/-	
14708065	Warsaw (STP)	0.00	.00*	-	-	-	-		4Ca
14808066	Sugar Bay Rest.	0.16	.001	10/.1	10/.1	4/.1	8		
14908066	Sun Oil Service Station	0.16	.001	10/.1	10/.1	4/.1	8		
15208068	Big Bone Mobile Home Park & Big Bone Grill	4.25	.011	24/2.2	24/2.2	4/.4	8		
15308068	Texaco Service Station	0.77	.002	24/.4	24/.4	4/.1	8		

*Intermittent discharge.

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
15408068	Sunoco Service Station	0.77	.002	24/.4	24/.4	4/.1	8		
15508068	Walton Verona H.S.	4.25	.011	24/2.2	24/2.2	4/.4	8		
15608068	Sun Oil Service Station	0.77	.002	24/.4	24/.4	4/.1	4		
15708068	Baker's Elmo Boone Inn	2.32	.006	24/1.2	24/1.2	4/.2	8		
15808068	Boron Oil Truck Plaza	4.55	.028	10/2.3	10/2.3	4/.9	8		
15908068	Days Inn & Hotel	3.74	.023	10/1.9	10/1.9	4/.8	8		
16208068	Standard Oil Service Station	4.25	.011	24/2.2	24/2.2	4/.4	8		
16308068	Big Bone Lick St. Park	7.32	.045	10/3.8	10/3.8	4/1.5	8		
16408068	Walton (STP)	35.78	.12	10/10	10/10	4/4	8		54Aa
16508071	Richmond Villa Mobile Home	41.36	.107	24/21.4	24/21.4	4/3.6	8		
16608071	Florence (STP)	325.26	2.0	10/166.8	10/166.8	4/66.7	8		1105Aa
16708071	KY International Raceway	10.05	.026	24/5.2	24/5.2	4/.9	8		
1680873	Burl Parks Subd	13.14	.034	24/6.8	24/6.8	4/1.1	4		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD5	SS	NH3	DO mg/L	Other	
16908073	Hickory Hill Subd	13.14	.034	24/6.8	24/6.8	4/1.1	8		
17208073	Boone Creek Subd	22.03	.057	24/11.4	24/11.4	4/1.9	8		
17308076	Hebron Elem School	0.77	.002	24/.4	24/.4	4/.1	8		
17408076	Chester Goodridge Elem School	4.25	.011	24/2.2	24/2.2	4/.4	8		
17508076	Greater Cincinnati Airport	26.67	.069	24/13.8	24/13.8	4/2.3	8		
17608077	KY Jockey Club	18.55	.048	24/9.6	24/9.6	4/1.6	8		
17808078 and 17908078	Gejmann Bros. Subd and Alexandria H.S.	20.49	.053	24/10.6	24/10.6	4/1.8	8		
18208078	Douglas Subd	3.25	.02	10/1.7	10/1.7	4/.7	8		
18308078	Newport National Bank	0.16	.001	10/.1	10/.1	4/.1	8		
18408078	Schabel Motel	1.93	.005	24/1	24/1	4/.2	8		
18508078	St. Joseph Parish Convent	3.09	.008	24/1.6	24/1.6	4/.3	8		
18708080	Alexandria (STP)	127.56	.33	10/27.5	10/27.5	4/11	8		228Aa
18808085	Brooksville (STP)	21.96	.135	10/11.3	10/11.3	4/4.5	8		100C-

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
18908085	Kern's Meat Processing	0.11	.0003	24/.1	24/.1	4/.1	8		
19208087	Chatham Rest Home	0.81	.005	10/.4	10/.4	4/.2	8		
19308087	Bracken Center Apt.	0.98	.006	10/.5	10/.5	4/.2	8		
19408087	Clopay	0.00	.550	-	-	-	8		
19508089	Simon Kenton Subd.	12.37	.032	24/6.4	24/6.4	4/1.1	8		
19608089	Dr. Tenery Residence	0.19	.0005	24/.1	24/.1	4/.1	8		
19708089	KY Dept. of Hwy	0.39	.001	24/.2	24/.2	4/.1	8		
19808089	Ashland Service Station	0.19	.0005	24/.1	24/.1	4/.1	8		
19908089	Parker Tobacco Co.	5.80	.015	24/3	24/3	4/.5	8		
20208089	Washington Methodist Church	3.87	.001	24/.2	24/.2	4/.1	8		
20308089	Maysville Community College	4.64	.012	24/2.4	24/2.4	4/.4	8		
20408089	Maysville Vocational School	1.16	.003	24/.6	24/.6	4/.1	8		
20508089	Mason Co. H.S.	3.87	.010	24/2	24/2	4/.3	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD5	SS	NH3	DO mg/L	Other	
20608089	Mason Co. H.S. Bus Garage	0.19	.0005	24/.1	24/.1	4/.1	8		
20708089	Mason Co. Middle School	1.93	.005	24/1	24/1	4/.2	8		
20808089	Mason Co. San. Dist. 2	19.33	.050	24/10	24/10	4/1.7	8		
20908089	Mason Co. San. Dist. 1	11.60	.030	24/6	24/6	4/1	8		
21208089	Central Center Shopping	11.60	.03	24/6	24/6	4/1	8		
21308090	Bon Haven Subd	3.09	.008	24/1.6	24/1.6	4/.3	8		
21408090	Pinewood Subd	6.57	.017	24/3.4	24/3.4	4/.6	8		
21508090	Wald Mfg.	67.17	.413	10/34.4	10/34.4	4/13.8	8		
21608090	Mefford Hill	3.09	.008	24/1.6	24/1.6	4/.3	8		
21708091	Tollesboro H.S.	0.39	.001	24/.2	24/.2	4/.1	8		
21808091	Tollesboro Elem. School	0.71	.002	24/.4	24/.4	4/.1	8		
21908095	Garrison School	0.33	.002	3/.1	3/.1	4/.1	8		
22208100	Grays Branch Elem School	0.65	.004	10/.3	10/.3	4/.1	8		
22308103	Wurtland (STP)	28.0	.10	10/8.3	10/8.3	4/3.3	8		51C-

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
22508105 and 22608105	Ashland Plaza and Greenup Mall	5.20	.032	10/2.7	10/2.7	4/1.1	8		
22708106	Oakwood Mobile Home Trailer Park	1.16	.003	24/.6	24/.6	4/.1	8		
22808106	Green Acres Trailer Park	3.87	.01	24/2	24/2	4/.1	8		
22908106	Ashland Vocational Technical School	5.03	.013	24/2.6	24/2.6	4/.4	8		
23208106	Air Products & Chemicals	0.00	.067	-	-	-	8	Cr .9/- Zn .9/-	
23308106	National Mine Service	2.71	.007	24/1.4	24/1.4	4/.2	8		
23408106	Ashland Oil Service Station	0.39	.001	24/.2	24/.2	4/.1	8		
23508106	Humble Oil Service Station	0.77	.002	24/.4	24/.4	4/.1	8		
23608106	Breezeland Swim Club	1.93	.005	24/1	24/1	4/.2	8		
23708108	Catletts Creek Elem School	1.30	.008	10/.7	10/.7	4/.3	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
23810002	Sturgis (STP)	139.72	.51	15/63.8	15/63.8	4/17	8		68Ca
23910002	Bills Truck Stop	0.77	.002	24/.4	24/.4	4/.1	8		
24210002	O'Nan Trailer Park	1.30	.008	10/.7	10/.7	4/.3	8		
24310003	Hudson's Rest. & Motel	1.55	.004	24/.8	24/.8	4/.1	8		
24410004	Clay & Wheatcroft (STP)	26.85	.161	10/13.4	10/13.4	4/5.4	8		901Ca
24510004	Dixon Elem School	2.32	.006	10/.5	10/.5	4/.2	8		
24710005	Alexandria Stone	0.00	.10	-	-	-	8		
24810006	Providence (STP)	40.03	.24	10/20	10/20	4/8	8		232Ca
24910008	County Meadows Subd	4.88	.03	3/.8	3/.8	4/1	8		
25210008	Nebo H.S.	0.65	.004	10/.3	10/.3	4/.1	8		
25310008	W. Hopkins H.S.	1.46	.009	10/.8	10/.8	4/.3	8		
25410008	Pittsubrg & Midway Coal Co.	1.93	.005	10/.4	10/.4	4/.2	8		
25510009	Earlington (STP)	24.39	.15	10/12.5	10/12.5	4/5	8		179C-
25610009	Chateau Mobile Home Park	2.76	.017	10/1.4	10/1.4	4/.6	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
25710011	Frank Youngs Subd	8.12	.021	10/1.8	10/1.8	4/.7	8		
25810012	Dawson Springs (STP)	37.40	.23	10/19.2	10/19.2	4/7.7	8		285Ca
25910012	4H Camp for UK	3.92	.011	10/.9	10/.9	4/.4	8		
26210014	Pennyrile State Park	0.81	.005	10/.4	10/.4	4/.2	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
26311001	Greenup Co. Vocational School	2.71	.007	24/1.4	24/1.4	4/.2	4		
26411003	Sunshine Elem School	0.65	.004	10/.3	10/.3	4/.1	8		
26511005	Carter City Consolidated Sch.	0.77	.002	24/.4	24/.4	4/.1	8		
26611006	Olive Hill (STP)	29.27	.18	10/15	10/15	4/6	8		200Ca
26711006	West Carter Co. H.S.	2.71	.007	24/1.4	24/1.4	4/.2	8		
26811006	Standard Oil Service Station	0.36	.001	24/.2	24/.2	4/.1	8		
26911006	Lawton Elem School	0.49	.003	10/.3	10/.3	4/.1	8		
27211006	Carter Caves State Park	0.39	.001	24/.2	24/.2	4/.1	8		
27311006	Upper Tygarts Jr. H.S.	0.77	.002	24/.4	24/.4	4/.1	8		

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
27408200	Semet Solvay		2.5			-/40		cyanide -/9 phenol -/.6 pH 6-9	
27508201	Ashland (STP)	9358	4.0	30/1000	30/1000	N/A	4		997Aa
27608201	Armco Steel	1000	30.51		-/4900	-/670		cyanide -/40 phenol -/30 oil & grease -/1690 Fe -/1600 Cr -/20 Cl -/14800	
27708201	Mansbach		.024						
28208202	C&O/B&O RR (Greenup)		.409	30/-	30/-			phenol .25/- oil & grease 10/- Cr .25/- Cu .2/- Surfactants .35/- Fecal coliform 200/100 ml	
28308203	E.I. Dupont (Greenup)		1.62	-/100	-/200			Cr -/7 Pb -/7 COD -/432	
28408204	South Shore (STP)	96	.16	30/40	30/40	N/A	4		4C-
28508205	Vanceburg (STP)	60	.10	30/25	30/25	N/A	4		4C-
28608205	Frankfort Material		.16		55/-			pH 6-9	

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
28708206	Maysville (STP)	516	1.3	30/325	30/325	N/A	4		11C-
28808207	C&O/B&O RR (Silver Grove)		.09	30/-	30/-			oil & grease 10/- phenols .25/- surfactants .35/- fecal coliform 200/100 ml Cr .25/- Cu .2/-	
29208211	Dow Corning	830	.24	-/825	-/550	-	-	COD -/4250 Cu -/4.25 Cl -/60000	
29308211	M&T Chemical		4.32	-/800	-/1200	-/60			
29408212	Kawneer		.72		-/112			Al -/3.7	
29508213	Nugent Sand Co.		.025		-/11.4			pH 6-9	
29608214	Louisville - Morris Forman (MSD)	50040	90	30/22518	30/22518	N/A	4		14999Ab
29708214	Borden Chemical		1.49	-	-	-			
29808214	American Synthetic Rubber Co.		2.0	-/338	-/549			COD -/5644 oil & grease -/135	
30408215	Stauffer Chemical		.43					COD -/154 Cr -/2.6 oil & grease -/51 phenols -/2.6 CCl_4 -/10 pH 6-9	

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day)						Priority
			Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	
30508216	West Point (STP)	72	.182	30/45	30/45	N/A	4		8C-
30608216	Olin Chemical	2000	28.08						
	001			-/2000	-/4000			Cr -/10 Pb -/10 phenols -/8	
	002			-/400	-/165			COD -/471 Cr -/1 Pb -/1.3 phenols -/3	
30708217	Brandenburg (STP)	59	.165	30/41	30/41	N/A	4		10C-
30808217	Cloverport (STP)	69	.13	30/32	30/32	N/A	4		8C-
30908217	Western Kraft		5.86	-/3850	-/3500			fecal coliform 1000/100 ml	
31208218	Wescor		2.8	-/2210	-/3400				
31308218	Hawesville (STP)	60	.14	30/35	30/35	N/A	4		5Ca
31408218	National Aluminum		.114		30/-			oil & grease 10/- Cr .5/- fecal coliform 200/100 ml	
31508218	National Southwire Aluminum		.011	30/-	-/1479			oil & grease -/247 fecal coliform 200/100 ml F -/986	
31608219	Lewisport (STP)	42	.125	30/31	30/31	N/A	4		8Ca

EXHIBIT B1.5t (Continued) WASTE LOAD ALLOCATIONS (1980)

Code Number	Facility	Maximum Daily TOD Load lb/day	Proposed Effluent Characteristics (mg/L / lb/day) Flow mgd	BOD_5	SS	NH_3	DO mg/L	Other	Priority
31708219	Green River Steel		6,075						
	001				-/60			Zn .5/- Cl .2/- oil & grease 10/- pH 6-9 Cr 1/-	
	002			30/-	30/-			fecal coliform 200/100 ml	
31808219	Glenmore Dist.	236	.0145	-/40	-/40				
31908219	Medley Dist.		1.0	-/22	-/22				
32208219	Fleishman Distillery		1.43	-/48	-/48				
32308219	W.R. Grace	255	2.59	-/255	-/360			COD -/2570 oil & grease -/105 phenols -/1.5 PCB's -/0.1	
32408220	Owensboro (STP)	4148	9.7	30/2427	30/2427	N/A	4		604Aa
32508222	Henderson (STP)	1427	2.53	30/633	30/633	N/A	4		177Aa
32608226	Paducah (STP)	1664	3.5	30/876	30/876	N/A	4		20B-

EXHIBIT B-1.6t MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals	(mg/L)
01906007	Grayson STP	T4B/none	8	2.61	BOD SS NH_3 DO	10 10 4 8
00106001	Greenup STP	Nitrification/T4B	2	0.542	BOD SS NH_3 DO	24 24 4 4
N/A	Sandy Hook STP	T4B/none	2	1.33	BOD SS NH_3 DO P	10 10 4 8 *

*To be determined

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals	(mg/L)
18708080	Alexandria STP	T4B/none	12	4.55	BOD SS NH_3 DO	10 10 4 8
27508201	Ashland STP	EPA Secondary/none	548	36.69	BOD SS NH_3 DO	30 30 N/A 4
N/A	Augusta STP	EPA Secondary/none	5	0.63	BOD SS NH_3 DO	30 30 N/A 4
30708217	Brandenburg STP	EPA Secondary/none	5	0.782	BOD SS NH_3 DO	30 30 N/A 4
18808085	Brooksville STP	T4B/none	4	0.559	BOD SS NH_3 DO	10 10 4 8
05508021 05308018	Camp Breckinridge Morganfield STP	T4B/none	43	2.22	BOD SS NH_3 DO	10 10 4 8
N/A	Campbell-Kenton San. Dist. #1 (Dry Creek)	EPA Secondary/none	–(1)	144.74	BOD SS NH_3 DO	30 30 N/A 4
30808217	Cloverport STP	EPA Secondary/none	4	0.89	BOD SS NH_3 DO	30 30 N/A 4
16608071	Florence STP	T4B/increased capacity	45	4.93	BOD SS NH_3 DO	10 10 4 8
N/A	Ghent STP	EPA Secondary/none	1	0.74	BOD SS NH_3 DO	30 30 N/A 4

(1) Sludge produced at the proposed Dry Creek Regional Wastewater Treatment plant is to be incinerated.

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals	(mg/L)
N/A	Greenup Co. Environmental Commission-Pond Run (Flatwoods, Raceland, Worthington, Russell	EPA Secondary/none	48	4.125	BOD SS NH_3 DO	30 30 N/A 4
08208035	Hardinsburg STP	T4B/none	5	1.88	BOD SS NH_3 DO	10 10 4 8
31308218	Hawesville STP	EPA Secondary/ increased capacity	5	1.11	BOD SS NH_3 DO	30 30 N/A 4
32508222	Henderson STP	EPA Secondary/none	206	63.72	BOD SS NH_3 DO	30 30 N/A 4
N/A	Irvington	T4B/none	4	2.19	BOD SS NH_3 DO	10 10 4 8
03608002	Kevil STP	T4B/none	0(1)	1.14	BOD SS NH_3 DO	10 10 4 8
03308001	La Center STP	T4B/none	2	1.18	BOD SS NH_3 DO	10 10 4 8
14508052	La Grange STP	T4B/none	4	1.12	BOD SS NH_3 DO	10 10 4 8
31608219	Lewisport STP	EPA Secondary/ increased capacity	4	0.86	BOD SS NH_3 DO	30 30 N/A 4
12908050	Louisville - Hite Creek STP	Post Aeration/none	36	2.06	BOD SS NH_3 DO	10 10 4 8

(1) Assumes no sludge from a lagoon system.

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals	(mg/L)
29608214	Louisville - Morris Forman MSD	EPA Secondary/none	1607	611.18	BOD	30
					SS	30
					NH_3	N/A
					DO	4
N/A	Louisville - North County STP	EPA Secondary/ increased capacity	124	46.67	BOD	30
					SS	30
					NH_3	N/A
					DO	4
N/A	Louisville - West County STP	EPA Secondary/none	739	237.3	BOD	30
					SS	30
					NH_3	N/A
					DO	4
04708013	Marion STP	Nitrification/T4B	4	1.04	BOD	24
					SS	24
					NH_3	4
					DO	8
28708206	Maysville STP	EPA Secondary/none	29	6.56	BOD	30
					SS	30
					NH_3	N/A
					DO	4
04408008 04508008	McCracken #1 & McCracken #2	T4B/none	10	3.35	BOD	10
					SS	10
					NH_3	4
					DO	8
N/A	Milton STP	EPA Secondary/none	2	1.08	BOD	30
					SS	30
					NH_3	N/A
					DO	4
32408220	Owensboro STP	EPA Secondary/none	271	71.94	BOD	30
					SS	30
					NH_3	N/A
					DO	4
32608226	Paducah STP	EPA Secondary/none	190	30.6	BOD	30
					SS	30
					NH_3	N/A
					DO	4
N/A	Sanitary Dist. 1 (Greenup & Boyd Co.) (includes Sanitary Dist. 2)	EPA Secondary/none	22	15.72	BOD	30
					SS	30
					NH_3	N/A
					DO	4

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goal	(mg/L)
28408204	South Shore STP	EPA Secondary/none	5	1.6	BOD SS NH_3 DO	30 30 N/A 4
05208018	Uniontown STP	T4B/increased capacity	0(1)	1.1	BOD SS NH_3 DO	10 10 4 8
28508205	Vanceburg STP	EPA Secondary/none	2	1.59	BOD SS NH_3 DO	30 30 N/A 4
08408044	Vine Grove STP	T4B/none	11	1.818	BOD SS NH_3 DO	10 10 4 8
16408068	Walton STP	T4B/none	3	2.59	BOD SS NH_3 DO	10 10 4 8
14708065	Warsaw STP	None/none	0(1)	0.25	BOD SS NH_3 DO	30 30 N/A 4
30508216	West Point STP	EPA Secondary/none	4	0.276	BOD SS NH_3 DO	30 30 N/A 4

(1) Assumes no sludge from a lagoon system

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals	(mg/L)
24410004	Clay & Wheatcroft STP	T4B/none	4	1.887	BOD SS NH_3 DO	10 10 4 8
25810012	Dawson Springs STP	T4B/increased capacity	7	1.69	BOD SS NH_3 DO	10 10 4 8
25510009	Earlington STP	T4B/none	4	1.01	BOD SS NH_3 DO	10 10 4 8
24810006	Providence STP	T4B/increased capacity	10	1.76	BOD SS NH_3 DO	10 10 4 8
23810002	Sturgis STP	Nitrification/T4B	0(1)	2.12	BOD SS NH_3 DO	15 15 4 8

(1) Assumes no sludge from a lagoon system.

EXHIBIT B-1.6t (Continued) MUNICIPAL NEEDS

Code Number	Facility	Treatment Needs 1980/1995	1995 Sludge Disposal Needs (ft^3/day)	Cost Millions $	Compliance Goals (mg/L)
26611006	Olive Hill STP	T4B/increased capacity	4	1.65	BOD 10 SS 10 NH_3 4 DO 8

EXHIBIT B1.7t SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN(1)

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
06001										2.8	26.2
	001	0.1	11.7	11.7							
06002										3.1	3.1
06003										0.1	0.5
	002	0.0021	0.2	0.2							
06004										4.1	87.6
	003	0.0015	0.2	0.2							
	004	0.0005	0.1	0.1							
	005	0.012	1.4	1.4							
	006	0.0173	2.0	2.0							
	007	0.1	31.7	31.7	6.7						
	008	0.016	1.9	1.9							
	009	0.004	0.5	0.5							
	012	0.001	0.1	0.1							
	013	0.001	0.1	0.1							
	014	0.0038	0.4	0.4							
06005										0.5	0.7
	015	0.001	0.1	0.1							

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(1) Chapter IV describes in detail the development of all factors used to determine the Segment Priority.

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
06006										0.6	2.0
	016	0.0025	0.3	0.3							
	017	0.0015	0.2	0.2							
	018	0.0015	0.2	0.2							
06007										3.5	203.7
	019	0.35	87.6	87.6	23.4						
	022	0.007	0.8	0.8							
06008										0.4	0.8
	023	0.0015	0.2	0.2							
06009										0.7	1.1
	024	0.0021	0.2	0.2							
06010										1.1	2.3
	025	0.005	0.6	0.6							
06011									100	0.4	100.4
06012									100	4.1	105.7
	026	0.007	0.8	0.8							
06013									100	5.2	109.0
	027	0.003	0.4	0.4							
	028	0.0093	1.1	1.1							
	029	0.0036	0.4	0.4							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08001										2.1	84.7
	032	0.13	15.2	15.2							
	033	0.11	19.3	19.3	1.8						
	034	0.04	4.7	4.7							
	035	0.01	1.2	1.2							
08002										1.2	21.2
	036	0.04	10.0	10.0							
08003										0.7	0.7
08004										1.8	1.8
08005										1.8	2.5
	037	3.5									
	038	0.003	0.35	0.35							
08006										0.9	0.9
08906										0.1	1.7
	039	0.007	0.8	0.8							
08007										7.2	11.0
	042	0.004	0.5	0.5							
	043	0.0117	1.4	1.4							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08008										5.3	128.1
	044	0.176	20.5	20.5							
	045	0.35	29.2	29.2	23.4						
08009										0.9	0.9
08010										0.2	0.2
08011										1.4	1.4
08012										0.7	1.9
	046	0.0049	0.6	0.6							
08013										4.0	25.4
	047	0.32	10.7	10.7							
08014										0.2	0.2
08015										0.5	9.9
	048	0.04	4.7	4.7							
08915										0.02	0.6
	049	0.0025	0.3	0.3							
08016										1.3	1.3
08017										0.2	0.2

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08018										6.2	204.6
	052	0.14	35.0	35.0							
	053	0.35	61.3	61.3	5.8						
08019										0.1	0.1
08020										0.2	0.2
08021										7.6	1051.7
	054	0.02	2.3	2.3							
	055	0.45	499.1	499.1	41.3						
08022										0.1	0.1
08023										2.7	7.7
	056	0.0025	0.3	0.3							
	057	0.015	1.8	1.8							
	058	0.003	0.4	0.4							
08024										0.2	0.2
	059	0.01									
08025										1.3	28.1
	062	0.05	5.8	5.8							
	063	0.008	0.9	0.9							
	064	0.006	0.7	0.7							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08025 (Continued)											
	065	0.005	0.6	0.6							
	066	0.005	0.6	0.6							
	067	0.02	2.3	2.3							
	068	0.015	1.8	1.8							
	069	0.006	0.7	0.7							
08026									100	1.8	106.2
	072	0.003	0.4	0.4							
	073	0.01	1.2	1.2							
	074	0.005	0.6	0.6							
08027										0.2	0.2
08028									100	3.1	103.1
08928										0.04	1.6
	075	0.007	0.8	0.8							
08029										0.3	1875.9
	076	5.7	1448	426							
	077	0.006	0.7	0.7							
	078	0.0005	0.1	0.1							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08030										0.3	7.7
	079	0.032	3.7	3.7							
08031										0.2	0.2
08032										1.6	1.6
08033										0.1	0.1
08034										0.1	0.1
08035										4.6	160.5
	082	0.11	74.3	74.3	7.3						
08036										0.1	0.1
08037										0.5	0.5
08038										0.3	0.3
08039										0.4	0.4
08040										0.3	0.3
08041										1.4	1.4
08042										5.5	5.5
08043										5.4	16.0
	083	0.045	5.3	5.3							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08044										8.9	42.0
	084	0.09	15.8	15.8	1.5						
08045									100	22.7	500.2
	085	0.3	35.0	35.0							
	086	0.1	11.7	11.7							
	087	0.5	58.4	58.4							
	088	0.09	10.5	10.5							
	089	0.1	11.7	11.7							
	092	0.15	17.5	17.5							
	093	0.169	19.7	19.7							
	094	0.056	12.1	12.1	0.9						
	095	0.1	11.7	11.7							
08046									100		100.0
	096	43.2									
	097	1.062									
08047									100	11.3	308.1
	098	0.05	15.8	15.8							
	099	0.01	1.2	1.2							
	102	0.125	14.6	14.6							
	103	0.525	61.3	61.3							
	104	0.0065	0.8	0.8							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08047 (Continued)											
	105	0.027	3.2	3.2							
	106	0.9									
	107	0.013	1.5	1.5							
08048										2.2	47.2
	108	0.08	9.3	9.3							
	109	0.052	6.1	6.1							
	112	0.0612	7.1	7.1							
08049									100	29.4	815.1
	113	0.133	15.5	15.5							
	114	0.34	39.7	39.7							
	115	0.06	7.0	7.0							
	116	0.32	37.4	37.4							
	117	0.05	5.8	5.8							
	118	0.05	10.8	10.8	0.8						
	119	0.10	11.7	11.7							
	122	0.08	9.3	9.3							
	123	0.115	13.4	13.4	1.9						
	124	0.05	5.8	5.8							
	125	0.585	68.3	68.3							
	126	1.0	116.8	116.8							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08050									100	16.8	230.5
	127	0.118	13.8	13.8							
	128	0.228	26.6	26.6							
	129	1.6									
	132	0.008	0.9	0.9							
	133	0.07	8.2	8.2							
	134	0.05	5.8	5.8	1.5						
	135	0.0021	0.2	0.2							
	136	0.005	0.6	0.6							
08051										3.0	8.6
	137	0.0512									
	138	0.015	1.8	1.8							
	139	0.008	0.9	0.9							
	142	0.001	0.1	0.1							
08052										4.6	432.1
	143	0.001	0.1	0.1							
	144	0.432	136.9	136.9	28.8						
	145	0.22	55.0	55.0	14.7						
	146	0.1263									
08053										1.5	1.5

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08054										0.8	0.8
08055										0.1	0.1
08056										0.1	0.1
08057										0.5	0.5
08058										0.1	0.1
08059										0.05	0.05
08060										0.3	0.3
08061										0.3	0.3
08062										0.3	0.3
08063										0.1	0.1
08064										0.2	0.2
08065										1.7	1.7
	147	0									
08066										0.3	0.9
	148	0.001	0.1	0.1							
	149	0.0015	0.2	0.2							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08067										0.1	0.1
08068										6.6	30.8
	152	0.01	1.2	1.2							
	153	0.0015	0.2	0.2							
	154	0.0015	0.2	0.2							
	155	0.01	1.2	1.2							
	156	0.0015	0.2	0.2							
	157	0.005	0.6	0.6							
	158	0.025	1.4	1.4							
	159	0.02	2.3	2.3							
	162	0.001	0.1	0.1							
	163	0.04	4.7	4.7							
	164	0									
08069										0.4	0.4
08070										0.7	0.7
08071									100	18.3	640.3
	165	0.09	10.5	10.5							
	166	1.45	181.4	181.4	133.0						
	167	0.022	2.6	2.6							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08072										1.3	1.3
08073										3.1	28.7
	168	0.03	3.5	3.5							
	169	0.03	3.5	3.5							
	172	0.05	5.8	5.8							
08074										0.6	0.6
08075										0.2	0.2
08076										0.8	26.1
	173	0.02	4.3	4.3	0.3						
	174	0.01	1.2	1.2							
	175	0.06	7.0	7.0							
08077										0.6	11.1
	176	0.042	4.9	4.9	0.7						
08977										1.8	49.6
	177	0.13	22.8	22.8	2.2						
08078										1.0	30.8
	178	0.022	2.6	2.6							
	179	0.024	2.8	2.8							
	182	0.019	2.2	2.2							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08078 (Continued)											
	183	0.0005	0.1	0.1							
	184	0.005	0.6	0.6							
	185	0.007	0.8	0.8							
	186	0.07	5.8	5.8							
08079										0.1	0.1
08080										6.3	67.1
	187	0.26	30.4	30.4							
08081										0.3	0.3
08082										0.2	0.2
08083										0.2	0.2
08084										0.2	0.2
08085										1.9	26.3
	188	0.125	10.4	10.4	3.6						
	189	0.0003									
08086										0.2	0.2

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08087										1.0	3.6
	192	0.005	0.6	0.6							
	193	0.006	0.7	0.7							
	194	0.45									
08088										0.7	0.7
08089										1.3	114.7
	195	0.32	37.4	37.4							
	196	0.005	0.6	0.6							
	197	0.001	0.1	0.1							
	198	0.0005	0.1	0.1							
	199	0.015	1.8	1.8							
	202	0.0015	0.2	0.2							
	203	0.012	1.4	1.4							
	204	0.003	0.4	0.4							
	205	0.01	1.2	1.2							
	206	0.0005	0.1	0.1							
	207	0.005	0.6	0.6							
	208	0.05	5.8	5.8							
	209	0.03	3.5	3.5							
	212	0.03	3.5	3.5							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08090										0.3	177.2
	213	0.008	0.9	0.9							
	214	0.017	2.0	2.0							
	215	0.3377	84.8	84.8							
	216	0.008	0.9	0.9							
08091										1.6	2.6
	217	0.0015	0.2	0.2							
	218	0.0024	0.3	0.3							
08092										0.2	0.2
08093										0.5	0.5
08094										1.3	1.3
08095										5.5	5.9
	219	0.0021	0.2	0.2							
08096										0.2	0.2
08097										0.04	0
08098										0.1	0.1
08099										0.1	0.1

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08100										0.1	1.1
	222	0.0042	0.5	0.5							
08101										0.2	0.2
08102										0.3	0.3
08103										1.6	25.0
	223	0.1	11.7	11.7							
08104										2.3	348.5
	224	0.15	166.2	166.2	13.8						
08105										0.1	8.5
	225	0.014	1.6	1.6							
	226	0.022	2.6	2.6							
08106										1.4	12.0
	227	0.0025	0.3	0.3							
	228	0.009	1.1	1.1							
	229	0.012	1.4	1.4							
	232	0.053									
	233	0.007	0.8	0.8							
	234	0.001	0.1	0.1							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08106 (Continued)											
	235	0.0015	0.2	0.2							
	236	0.005	0.6	0.6							
08107										0.1	0.1
08108										0.1	1.9
	237	0.0075	0.9	0.9							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
10001										0.3	0.3
10002										3.6	42.4
	238	0.44	18.3	18.3							
	239	0.002	0.2	0.2							
	242	0.0075	0.9	0.9							
10003									100	0.3	101.5
	243	0.005	0.6	0.6							
10004									100	5.2	476.3
	244	0.16	177.5	177.5	14.7						
	245	0.006	0.7	0.7							
10005									100	2.1	102.1
	247	0.1									
10006										4.5	71.6
	248	0.115	29.7	29.7	7.7						
10007									100	0.1	100.1
10008									100	3.5	112.9
	249	0.025	2.9	2.9							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
10008 (Continued)											
	252	0.0035	0.4	0.4							
	253	0.0075	0.9	0.9							
	254	0.004	0.5	0.5							
10009									100	3.4	152.0
	255	0.012	22.0	22.0	0.8						
	256	0.016	1.9	1.9							
10010									100	2.5	102.5
10011										1.0	5.6
	257	0.02	2.3	2.3							
10012									100	4.0	202.7
	258	0.17	42.5	42.5	11.3						
	259	0.01	1.2	1.2							
10013										0.6	0.6
10014									100	4.8	105.4
	262	0.005	0.6	0.6							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp. (^oF) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./1000	Segment Priority
11001										3.5	5.5
	263	0.0082	1.0	1.0							
11002										0.9	0.9
11003										0.4	1.4
	264	0.0042	0.5	0.5							
11004										2.5	2.5
11005										1.9	2.3
	265	0.0021	0.2	0.2							
11006										6.4	64.5
	266	0.15	26.3	26.3	2.5						
	267	0.007	0.8	0.8							
	268	0.001	0.1	0.1							
	269	0.0025	0.3	0.3							
	272	0.001	0.1	0.1							
	273	0.002	0.2	0.2							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08200									100	0.1	4457.6
	274	3.0			4310			47.5			
08201									100	33.8	28384
	275	3.75									
	276	30.51		27492			758				
	277	0.024									
08202									100	10.8	291.2
	278	0.75									
	279	0.2									
	282	0.409	180.4								
08203										0.4	10321.4
	283	11.7	667	9636			18				
08204										1.4	1.4
	284	0.12									
08205									100	3.3	103.7
	285	0.09			0.4						
	286	0.16									
08206										9.6	9.6
	287	1.3									

EXHIBIT E1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08207										0.8	8.3
	288	0.09	7.5								
08208									100		100
08209									100	170	270
	289	15.3									
08210										2.2	2.2
08211									100	0.9	6910
	292	0.24	1175								
	293	4.32	2700	2799							
	402	23.8						135			
08212										3.1	97.1
	294	0.45		94							
08213									100	0.4	4546
	295	0.025		4445.6							
08214									100	500	13655
	296	82.3									
	297	1.49									
	298	2.0	279	241							
	403	453.9						6535			
	404	91.6						6000			

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH3-N #/day Above Allowable	PO4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08215									100	18.0	12929.5
	303	1.19									
	304	0.615									
	405	575.5						6790			
	406	91.6						6000			
08216										3.6	139316.6
	305	0.18									
	306	28.08	15600	123713							
08217										5.2	6791.2
	307	0.14									
	308	0.12									
	309	5.86	6020	766							
08218										1.7	5771.7
	312	2.8	1990	2600							
	313	0.12									
	314	0.114									
	315	0.3									
	407	151.2									
08219									100	2.7	9094.2
	316	0.069			2.0						
	317	6.075		1613							
	318	0.0145	23	2.5							

EXHIBIT B1.7t (Continued) SEGMENT PRIORITY DATA
FOR THE OHIO RIVER BASIN

Segment No.	Discharge No.	1975 Flow (mgd)	BOD #/day Above Allowable	SS #/day Above Allowable	NH_3-N #/day Above Allowable	PO_4 #/day Above Allowable	Metals #/day Above Allowable	Temp.(°F) Above Allowable x Q (mgd)	Non-Point Sources	1975 Seg. Pop./ 1000	Segment Priority
08219 (Continued)											
	319	1.0	69	445							
	322	1.43	1605	4279							
	323	2.59	351	602							
	408	291.0						4300			
08220									100	55.1	155.1
	324	6.3									
08221									100	0.4	840.4
	409	40.0						740			
08222									100	24.9	124.9
	325	2.39									
08223										0.3	0.3
08224										1.2	1.2
08225										0.5	0.5
08226									100	30.4	18530.4
	326	3.3									
	410	129.2						18400			
08227										0.1	0.1

SEGMENT # 06001 ANALYSIS

Classification: EL Priority: 26

Location

This segment is located within the Little Sandy River Basin in Greenup County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 31 square miles. Estimated 1975 population of this segment is 2777.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 2.7 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
00106001	Greenup (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Code No.	Municipal Priority
00106001	43Ca

Municipal Needs

Greenup 5 Years-1980: The Greenup extended aeration plant is adequate to meet 1980 needs during summer months. To achieve year-round nitrification, additional treatment is required. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional treatment or capacity is expected.

Alternative Water Quality Management Plans

To achieve year-round nitrification additional sedimentation,adding chemicals to the primary unit, adding a roughing filter or land application would be needed. As an alternative to year-round nitrification, the effluent could be pumped to the Ohio River.

SEGMENT # 06002 ANALYSIS

Classification: EL Priority: 3

Location

This segment is located within the Little Sandy River Basin in Greenup and Carter Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 70 square miles. Estimated 1975 population of this segment is 3134.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 2.7 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06003 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Little Sandy River Basin in Greenup County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 81.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
00206003	Greenbo Lake State Park	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06004 ANALYSIS

Classification: WQL Priority: 88

Location

This segment is located within the Little Sandy River Basin in Greenup, Boyd, Carter and Lawrence Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 157 square miles. Estimated 1975 population of this segment is 4088.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

Miscellaneous USGS Water Quality Data for 1970 are insufficient to describe existing water quality of this segment.

Point Source Discharges

There are 10 point source discharges in this segment.

Code No.	Discharge	Type
00306004	Humble Oil Service Station	Domestic
00406004	Sunoco Service Station	Domestic
00506004	Kentucky Electric Steel	Domestic
00606004	Cannonsburg Elem.& High Sch.	Domestic
00706004	Federal Correctional Instit.	Domestic
00806004	Fairhill Estates, Inc.	Domestic
00906004	Miller's Little Giant Food Store	Domestic
01206004	Crisps Dairy Treat	Domestic
01306004	Hwy. Maintenance Garage	Domestic
01406004	Smith Trailer Park	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
00306004	0.77
00406004	0.39
00506004	4.64
00606004	2.93
00706004	16.26
00806004	6.18
00906004 01206004	1.93
01306004	0.39
01406004	1.55

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

The Federal Correctional Institute (007) could hold its effluent in lagoons and discharge intermittently under favorable conditions instead of upgrading its effluent. Crisps Dairy (012) might be included in the lagoon alternative with discharge 007 instead of upgrading its effluent.

SEGMENT # 06005 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 13 square miles. Estimated 1975 population of this segment is 527.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
01506005	Ashland Oil Service Station	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

The domestic discharge within this segment (015) is within 2 miles of the Grayson municipal wastewater treatment plant and could be regionalized rather than upgrading its effluent.

SEGMENT # 06006 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 16 square miles. Estimated 1975 population of this segment is 648.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
01606006	Cloverleaf Trailer Park	Domestic
01706006	Humble Oil Service Station	Domestic
01806006	Sun Oil Service Station	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

The three domestic discharges (016, 017, 018) in this segment are within 1.5 miles of the Grayson municipal wastewater treatment plant and could be regionalized rather than upgrading their effluents.

SEGMENT # 06007 ANALYSIS

Classification: WQL Priority: 204

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 28 square miles. Estimated 1975 population of this segment is 3503.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 1.5 cfs.

Water Quality Data

There are 2 water quality monitoring stations in this segment and an additional secondary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

Miscellaneous USGS Water Quality Data for 1970 are insufficient to describe existing water quality of this segment. USGS Water Resources Data for 1970, 1972 and 1973 indicate that the water temperature was in satisfactory condition for these years.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
01906007	Grayson (STP)	Municipal
02206007	East Carter County H.S.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
01906007	62.61	488Ca
02206007	2.71	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Grayson 5 Years-1980: The trickling filter plant in Grayson needs to be expanded and upgraded to T4B treatment. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional needs are expected.

Alternative Water Quality Management Plans

Domestic discharge 022 could be regionalized with Grayson's municipal plant instead of upgrading its effluent.

Grayson could meet T4B treatment with one of the following methods: TF 1-4.

SEGMENT # 06008 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 446.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
02306008	Conley's Trailer Park	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06009 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 729.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
02406009	Graham Jr. High School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06010 ANALYSIS

Classification: WQL Priority: 2

Location

This segment is located within the Little Sandy River Basin in Carter and Elliott Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 33 square miles. Estimated 1975 population of this segment is 1079.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
02506010	Celestial Camper Court	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation :

Code No.	TMDL #/day TOD
02506010	0.81

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06011 ANALYSIS

Classification: WQL Priority: 100

Location

This segment is located within the Little Sandy River Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 446.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 1.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional secondary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

Miscellaneous USGS Water Quality Data for 1970 are insufficient to describe existing water quality of this segment. USGS Water Resources Data for 1970, 1972 and 1973 indicated that water temperature conditions were satisfactory for these years.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Water quality standards violations in this segment are a result of non-point source discharges, for which no waste load allocations were computed.

This segment is classified water quality limited because of non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06012 ANALYSIS

Classification: WQL Priority: 106

Location

This segment is located within the Little Sandy River Basin in Carter, Elliott and Lawrence Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 137 square miles. Estimated 1975 population of this segment is 4073.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional secondary monitoring station is recommended.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
02606012	Hitchen's Consol. School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
02606012	1.14

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 06013 ANALYSIS

Classification: WQL Priority: 109

Location

This segment is located within the Little Sandy River Basin in Carter, Elliott and Rowan Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 194 square miles. Estimated 1975 population of this segment is 5233.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 1.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
02706013	Mico Mfg. Co.	Industrial
02806013	Elliott Co. Elem. School	Domestic
02906013	Lakeside Elem. School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
02706013	0.49	
02806013	1.46	
02906013	1.55	
Sandy Hook		20C-

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Sandy Hook 5 Years-1980: Sandy Hook needs an advanced wastewater treatment plant with T4B treatment. The discharge would be located above Lake Grayson. Therefore, phosphorus removal facilities should be incorporated in the design. A collection system is also needed.

20 Years-1995: No additional needs are expected subject to water quality data taken in Grayson Lake.

Alternative Water Quality Management Plans

The City of Sandy Hook has an option of any one of the trickling filter or lagoon options or the activated sludge options 1, 2 or 4.

Domestic discharges 027, 028 and 029 could be regionalized with Sandy Hook rather than upgrading their individual effluents.

SEGMENT # 08001 ANALYSIS

Classification: WQL Priority: 85

Location

This segment is located within the Ohio River Basin in Ballard County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 60 square miles. Estimated 1975 population of this segment is 2057.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
03208001	Fin & Feather Lodge	Domestic
03308001	La Center STP	Municipal
03408001	Bandana Elementary School	Domestic
03508001	Ballard County High School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
03208001	21.14	
03308001	18.38	213Ca
03408001	0.65	
03508001	3.87	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

La Center 5 Years-1980: La Center's trickling filter needs to be upgraded to T4B treatment. The capacity is adequate. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

La Center's trickling filter plant can be upgraded using one of alternatives TF1-4 .

SEGMENT # 08002 ANALYSIS

Classification: WQL Priority: 21

Location

This segment is located within the Ohio River Basin in Ballard County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 46 square miles. Estimated 1975 population of this segment is 1175.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
03608002	Kevil STP	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
03608002	6.5	49C-

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Kevil 5 Years 1980: Kevil's lagoon has to be upgraded to T4B treatment. The capacity is adequate. And infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Kevil's lagoon could be upgraded using any of the lagoon alternatives.

SEGMENT # 08003 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Ballard and McCracken Counties. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 672.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08004 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Ohio River Basin in Ballard and McCracken Counties. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 19 square miles. Estimated 1975 population of this segment is 1811.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08005 ANALYSIS

Classification: EL Priority: 3

Location

This segment is located within the Ohio River Basin in McCracken County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 17 square miles. Estimated 1975 population of this segment is 1778.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
03708005	AEC Paducah	Industrial
03808005	Forrestdale School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08006 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in McCracken County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 9 square miles. Estimated 1975 population of this segment is 941.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08906 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Ohio River Basin in McCracken County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 1 square mile. Estimated 1975 population of this segment is 105.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is a point source discharge in this segment.

Code No.	Discharge	Type
03908906	Essex Wire Corp.	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08007 ANALYSIS

Classification: EL Priority: 11

Location

This segment is located within the Ohio River Basin in McCracken County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 69 square miles. Estimated 1975 population of this segment is 7217.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
04208007	Paducah Realty Co.	Domestic
04308007	Heath Upper Elem. & H.S.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharge 042 could be regionalized with McCracken Sanitary Districts 1 and 2 rather than upgrading its discharge.

SEGMENT # 08008 ANALYSIS

Classification: EL Priority: 128

Location

This segment is located within the Ohio River Basin in McCracken County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 23 square miles. Estimated 1975 population of this segment is 5266.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
04408008	McCracken #1	Municipal
04508008	McCracken #2	Municipal

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Code No.	Municipal Priority
04408008 04508008	268C-

Municipal Needs

McCracken 1 & 2 5 Years-1980: The McCracken 1 extended aeration plant needs to upgrade its effluent to achieve T4B treatment and the McCracken 2 trickling filter plant needs to upgrade its effluent for year round nitrification. The collection system needs to be expanded and an infiltration/inflow study conducted.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

McCracken 1 could either utilize alternatives AS 1, 2, or 4, or regionalize with the municipal sewer system in Paducah. McCracken 2 could upgrade its effluent by using one of the alternatives TF 1-4 taking into account the existing aerated lagoon or regionalize with the municipal sewer system in Paducah.

SEGMENT # 08009 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Livingston County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 41 square miles. Estimated 1975 population of this segment is 947.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08010 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Livingston County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 231.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08011 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Livingston and Crittenden Counties. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 74 square miles. Estimated 1975 population of this segment is 1402.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08012 ANALYSIS

Classification: WQL   Priority: 2

Location

This segment is located within the Ohio River Basin in Crittenden County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 46 square miles. Estimated 1975 population of this segment is 690.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
04608012	West Kentucky Youth Camp	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation :

Code No.	TMDL #/day TOD
04608012	1.38

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08013 ANALYSIS

Classification: EL Priority: 25

Location

This segment is located within the Ohio River Basin in Crittenden County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 59 square miles. Estimated 1975 population of this segment is 4044.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
04708013	Marion STP	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Code No.	Municipal Priority
04708013	37C-

Municipal Needs

Marion 5 Years-1980: Marion's extended aeration/aerated lagoon system produces a satisfactory effluent during summer months. To achieve year-round nitrification, additional treatment is required. No added capacity is needed. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Alternatives to achieve year-round nitrification are additional sedimentation, adding chemicals to the primary unit, adding a roughing filter, or land application.

SEGMENT # 08014 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Crittenden County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 165.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08015 ANALYSIS

Classification: WQL Priority: 10

Location

This segment is located within the Ohio River Basin in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 28 square miles. Estimated 1975 population of this segment is 498.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
04808015	Buffalo Branch Trailer Park	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
04808015	1.16

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08915 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 1 square mile. Estimated 1975 population of this segment is 18.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
04908915	Island Creek Coal Co.	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08016 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 71 square miles. Estimated 1975 population of this segment is 1264.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08017 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 178.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08018 ANALYSIS

Classification: WQL Priority: 205

Location

This segment is located within the Ohio River Basin in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 26 square miles. Estimated 1975 population of this segment is 6248.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
05208018	Uniontown STP	Municipal
05308018	Morganfield STP	Municipal

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
05208018	28.13	660C-
05308018*	---	

*This discharge will be regionalized to Camp Breckinridge STP.

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

1. Uniontown 5 Years-1980: Uniontown's lagoons need to be upgraded to T4B treatment. Increased capacity will be needed by 1980. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: Additional capacity will be needed but no further treatment is expected.

2. Morganfield 5 Years-1980: Morganfield is to abandon its Imhoff tank and trickling filter and direct flow to the upgraded Camp Breckinridge advanced wastewater plant. An infiltration/inflow study should be conducted and the existing collection system should be expanded to include Waverly and local industries.

20 Years-1995: Morganfield will continue to use the Camp Breckinridge facilities.

Alternative Water Quality Management Plans

Uniontown could upgrade the lagoon effluent by one of the lagoon alternatives or Uniontown could build a new advanced treatment plant (TF 1-4, AS 1, 2, or 4). Another alternative would be to pump the effluent to the Ohio River and thus reduce the effluent requirements to EPA secondary.

SEGMENT # 08019 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Union and Henderson Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 141.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08020 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Union and Henderson Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 159.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08021 ANALYSIS

Classification: WQL Priority: 1052

Location

This segment is located within the Ohio River Basin in Webster, Union and Henderson Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 238 square miles. Estimated 1975 population of this segment is 7649.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are 2 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
05408021	Peabody Coal Co. #2	Industrial
05508021	Camp Breckinridge STP	Municipal

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
05408021	3.25	
05508021	243.95	3442Ca

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Camp Breckinridge 5 Years-1980: Camp Breckinridge's primary plant needs to be upgraded to T4B treatment. No additional capacity is needed. (See Morganfield for other municipal needs). The Camp Breckinridge plant is to treat flows from Morganfield, Waverly and local industries.

20 Years-1995: No additional treatment is anticipated.

Alternative Water Quality Management Plans

The alternative most suited to upgrade the Camp Breckinridge plant would be one of AS 1, 2 or 4.

SEGMENT # 08022 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Henderson County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 123.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08023 ANALYSIS

Classification: WQL Priority: 8

Location

This segment is located within the Ohio River Basin in Henderson County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 114 square miles. Estimated 1975 population of this segment is 2657.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
05608023	Swope Trailer Park	Domestic
05708023	Carriage Mobile Homes	Domestic
05808023	Cairo Elem. School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
05608023	1.16
05708023	2.44
05808023	0.49

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08024 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Daviess County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 242.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
05908024	Medley Dist. Stanley	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08025 ANALYSIS

Classification: WQL Priority: 28

Location

This segment is located within the Ohio River Basin in Daviess County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 1251.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 8 point source discharges in this segment.

Code No.	Discharge	Type
06208025	E.H. Richmond Subd.	Domestic
06308025	Woodlawn Trailer Park	Domestic
06408025	Hillcrest Trailer Park	Domestic
06508025	Town & Country Trail.Pk.	Domestic
06608025	Lloyds Mechanical	Domestic
06708025	Colony Mobile Home Vill.	Domestic
06808025	Graham Estates Subd.	Domestic
06908025	Thurston School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
06208025	8.62
06308025	1.46
06408025	1.14
06508025	3.42
06608025	0.81
06708025	3.42
06808025	2.60
06908025	1.14

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharge 066 could be regionalized with the Owensboro municipal wastewater plant rather than upgrading its effluent.

The remaining domestic discharges could be combined into a lagoon system with intermittent discharges instead of upgrading each individual discharge.

SEGMENT # 08026 ANALYSIS

Classification: WQL Priority: 106

Location

This segment is located within the Ohio River Basin in Daviess County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 37 square miles. Estimated 1975 population of this segment is 1787.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
07208026	Maceo Elem. School	Domestic
07308026	Midsouth Home Sites	Domestic
07408026	Trail-A-Way Trailer Pk.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
07208026	0.49
07308026	1.79
07408026	0.81

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08027 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Daviess County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 242.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08028 ANALYSIS

Classification: WQL Priority: 103

Location

This segment is located within the Ohio River Basin in Daviess and Hancock Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 114 square miles. Estimated 1975 population of this segment is 3129.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional secondary monitoring station is recommended.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Water quality standards violations in this segment are a result of non-point source discharges, for which no waste load allocations were computed.

This segment is classified water quality limited because of non-point source discharge due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08928 ANALYSIS

Classification: WQL Priority: 2

Location

This segment is located within the Ohio River Basin in Hancock County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 36.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
07508928	American Olean Tile	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
07508928	1.30

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

Industrial Discharge 075 could be regionalized with the Lewisport municipal treatment plant instead of upgrading its effluent.

SEGMENT # 08029 ANALYSIS

Classification: WQL Priority: 1876

Location

This segment is located within the Ohio River Basin in Hancock County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 329.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
07608029	Martin Marietta Alum.	Industrial
07708029	Rest Haven Conval. Home	Domestic
07808029	Hancock County Branch Bank	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
07608029	1073.36
07708029 and 07808029	1.14

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharges 077 and 078 could be regionalized with the Lewisport municipal treatment plant instead of upgrading their effluents.

SEGMENT # 08030 ANALYSIS

Classification: WQL Priority: 8

Location

This segment is located within the Ohio River Basin in Hancock County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 328.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
07908030	Windward Heights Subd.	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
07908030	5.53

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08031 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Hancock County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 200.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08032 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Ohio River Basin in Hancock and Breckinridge Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 91 square miles. Estimated 1975 population of this segment is 1648.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08033 ANALYSIS

Classification: EL   Priority: 0

Location

This segment is located within the Ohio River Basin in Breckinridge County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 91.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08034 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Breckinridge County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 109.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08035 ANALYSIS

Classification: WQL Priority: 161

Location

This segment is located within the Ohio River Basin in Breckinridge and Hardin Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 156 square miles. Estimated 1975 population of this segment is 4606.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are 3 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.
Water quality data for this segment is presented in Exhibit A-1t.

Miscellaneous USGS Water Quality Data for 1971 are insufficient to describe the existing water quality of this segment.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
08208035	Hardinsburg STP	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
08208035	26.02	445Ca

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Hardinsburg 5 Years-1980: Hardinsburg's trickling filter plant needs to be upgraded to T4B treatment and the capacity needs to be increased. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: No additional treatment is anticipated.

Alternative Water Quality Management Plans

Hardinsburg could upgrade its trickling filter effluent by one of the following alternatives: TF 1-4.

SEGMENT # 08036 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Breckinridge County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 127.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08037 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Breckinridge and Meade Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 22 square miles. Estimated 1975 population of this segment is 471.

Additional details of the basic planning data are presented in Exhibit Bl.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08038 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Meade County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 295.

Additional details of the basic planning data are presented in Exhibit Bl.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08039 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Breckinridge and Meade Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 374.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08040 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Meade County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 253.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08041 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Meade County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 33 square miles. Estimated 1975 population of this segment is 1393.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08042 ANALYSIS

Classification: EL Priority: 6

Location

This segment is located within the Ohio River Basin in Breckinridge, Meade and Hardin Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 115 square miles. Estimated 1975 population of this segment is 5493.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Irvington 5 Years-1980: The city of Irvington needs to build an advanced wastewater treatment system and construct a collection system through the city.

20 Years-1995: No additional treatment is anticipated.

Alternative Water Quality Management Plans

It has been suggested in the Lincoln Trail ADD Study that Irvington could discharge to the sink holes in the area. Special consideration needs to be given to the effect of this discharge on the ground water. Surface water discharge of T4B could be achieved by any of the following methods: TF 1-4, AS 1, 2, or 4, or lagoon alternatives.

SEGMENT # 08043 ANALYSIS

Classification: EL Priority: 16

Location

This segment is located within the Ohio River Basin in Meade County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 65 square miles. Estimated 1975 population of this segment is 5487.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 5.2 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
08308043	Doe Valley Corp.	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08044 ANALYSIS

Classification: WQL Priority: 42

Location

This segment is located within the Ohio River Basin in Meade and Hardin Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 113 square miles. Estimated 1975 population of this segment is 8872.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 4.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional secondary monitoring station is recommended.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
08408044	Vine Grove (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD	Municipal Priority
08408044	63.43	152Ca

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Vine Grove 5 Years-1980: The Vine Grove trickling filter plant needs to be upgraded to T4B treatment and increased in capacity. An infiltration/inflow study should be undertaken and the collection system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Vine Grove's trickling filter could be upgraded using any one of the following alternatives: TF 1-4.

SEGMENT # 08045 ANALYSIS

Classification: WQL Priority: 500

Location

This segment is located within the Ohio River Basin in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 36 square miles. Estimated 1975 population of this segment is 22690.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 9 point source discharges in this segment.

Code No.	Discharge	Type
08508045	Forrest Hill Subd.	Domestic
08608045	Timothy Hill Subd.	Domestic
08708045	Valley Village San.Corp.	Domestic
08808045	Havalock Subd.	Domestic
08908045	West Springfield Subd.	Domestic
09208045	Ford Haven Subd.	Domestic
09308045	Villa Anna Subd.	Domestic
09408045	Valley High School	Domestic
09508045	Woodhaven Medical Sch.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from the Louisville Metropolitan Area.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
08508045	120.99
08608045	40.20
08708045	84.89
08808045	36.34
08908045	40.20
09208045	60.69
09308045	68.03
09408045	22.42
09508045	40.20

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to urban runoff.

Municipal Needs

Alternative Water Quality Management Plans

All the domestic discharges in this segment could be regionalized with one of the Louisville and Jefferson County Metropolitan Sewer District's municipal treatment plants rather than upgrading their individual effluents.

SEGMENT # 08046 ANALYSIS

Classification: WQL Priority: 100

Location

This segment is located within the Ohio River Basin in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is ---.*

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
09608046	E.I. Dupont (Louisville)	Industrial
09708046	Reynolds Metal (Louisville)	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from the Louisville Metropolitan Area.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
09608046	0.0
09708046	0.0

This segment is classified water quality limited because of non-point source discharges due to combined sewers.

Municipal Needs

Alternative Water Quality Management Plans

At the present E.I. Dupont discharges its sanitary waste to the Louisville MSD sewer system and Reynolds Metal also would have that option.

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*Population included in segment 08214.

SEGMENT #08047 ANALYSIS

Classification: WQL Priority: 308

Location

This segment is located within the Ohio River Basin in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 55 square miles. Estimated 1975 population of this segment is 11270.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.1 cfs.

Water Quality Data

There are 4 water quality monitoring stations in this segment and an additional secondary monitoring station is recommended.

Point Source Discharges

There are 8 point source discharges in this segment.

Code No.	Discharge	Type
09808047	Ormsby Village, Anchorage	Domestic
09908047	Middletown Elem. School	Domestic
10208047	Foxboro Manor Subd.	Domestic
10308047	Douglass Hills Subd.	Domestic
10408047	Village Sq. Shop Center	Domestic
10508047	Univ. of Louisville (School of Music)	Domestic
10608047	Klarer, Louisville	Industrial
10708047	Louisville Country Club	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from the Louisville Metropolitan Area.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
09808047	20.10
09908047	3.87
10208047	50.25
10308047	211.83
10408047	2.70
10508047	10.82
10608047	0.0
10708047	4.63

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Alternative Water Quality Management Plans

All domestic discharges in this segment could regionalize with one of the Louisville MSD wastewater treatment plants instead of upgrading their individual effluents where necessary. Presently Klarer of Kentucky, Inc. (106) discharges its process flow to the Louisville MSD system.

SEGMENT # 08048 ANALYSIS

Classification: WQL Priority: 47

Location

This segment is located within the Ohio River Basin in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 2190.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
10808048	New Market Subd.	Domestic
10908048	Holiday Inn	Domestic
11208048	Glenview Hill Subd.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
10808048	13.50
10908048	20.87
11208048	10.41

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

The 3 domestic discharges in this segment could regionalize with the Louisville MSD system instead of upgrading their individual effluents.

SEGMENT # 08049 ANALYSIS

Classification: WQL Priority: 815

Location

This segment is located within the Ohio River Basin in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 116 square miles. Estimated 1975 population of this segment is 29425.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 12 point source discharges in this segment.

Code No.	Discharge	Type
11308049	Thorn Hill Subd.	Domestic
11408049	Central State Hospital	Domestic
11508049	Green Spring Subd.	Domestic
11608049	Murray Hill Subd.	Domestic
11708049	Barbor Manner Subd.	Domestic
11808049	KY Children Home, Lyndon	Domestic
11908049	Westcreek Apts.	Domestic
12208049	Bancroft Subd.	Domestic
12308049	Plantation Subd.	Domestic
12408049	Old Brownsboro Place Subd.	Domestic
12508049	Rolling Hills Subd.	Domestic
12608049	Spring Valley Estates	Domestic

Effluent characteristics of the point source discharges in this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from the Louisville Metropolitan Area.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
11308049	22.61
11408049	57.73
11508049	24.35
11608049	54.32
11708049	20.10
11808049	20.10
11908049	16.91
12208049	32.47
12308049	19.68
12408049	20.10
12508049	99.37
12608049	40.20

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to urban runoff.

Municipal Needs

Alternative Water Quality Management Plans

All domestic discharges in this segment could be regionalized with the Louisville MSD system.

SEGMENT #08050 ANALYSIS

Classification: WQL Priority: 231

Location

This segment is located within the Ohio River Basin in Jefferson and Oldham Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 39 square miles. Estimated 1975 population of this segment is 16774.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.45 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA in 1972 is presented in Exhibit A-1t. These samples indicate low DO concentrations.

Point Source Discharges

There are 8 point source discharges in this segment.

Code No.	Discharge	Type
12708050	Hunting Ck. North Subd.	Domestic
12808050	Hunting Ck. South Subd.	Domestic
12908050	Hite Ck. (STP)	Municipal
13208050	Timberlake Subd.	Domestic
13308050	Willow Ck. Subd.	Domestic
13408050	Oldhan Co. Stone,Crestwood	Industrial
13508050	Cross Keys Development	Domestic
13608050	M.A. Stoess & Sons Subd.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from the Louisville Metropolitan Area.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
12708050	47.55	
12808050	92.00	
12908050	198.16	433Aa
13208050	3.09	
13308050	28.22	
13408050	8.46	
13508050	0.77	
13608050	1.93	

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Hite Creek 5 Years-1980: Hite Creek presently discharges an acceptable effluent and needs no additional capacity. However, if the ammonia nitrogen concentration in the influent rises due to additional domestic flow in proportion to the industrial flow from Ford Motor Co., then nitrification may be required. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: Nitrification may become necessary as described above.

Alternative Water Quality Management Plans

The Hite Creek plant could be regionalized with the Louisville MSD system or if nitrification becomes necessary, one of the following alternatives could be used: AS 1, 2 or 4.

Domestic discharges 127, 128 and 132 could be regionalized with the Louisville MSD system.

SEGMENT #08051 ANALYSIS

Classification: EL Priority: 9

Location

This segment is located within the Ohio River Basin in Oldham County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 32 square miles. Estimated 1975 population of this segment is 3046.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.3 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment but a secondary monitoring station is recommended.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
13708051	Clayton & Lambert Mfg.Co.	Industrial
13808051	Oldham County High School	Domestic
13908051	St. Francis School	Domestic
14208051	Texaco Service Station	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08052 ANALYSIS

Classification: WQL Priority: 432

Location

This segment is located within the Ohio River Basin in Oldham and Henry Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 40 square miles. Estimated 1975 population of this segment is 4631.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.1 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment but a secondary monitoring station is recommended.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
14308052	Highway Maintenance Building	Domestic
14408052	Kentucky State Reformatory for Men	Domestic
14508052	La Grange (STP)	Municipal
14608052	Anaconda Wire & Cable	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
14308052	0.39	
14408052	78.71	
14508052	37.40	1425Ca
14608052	0.0	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

La Grange 5 Years-1980: The La Grange trickling filter plant needs to be upgraded to T4B treatment. No increase in capacity is necessary. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

The LaGrange trickling filter could be upgraded using one of the following alternatives: TF 1-4.

Domestic discharge 143 could be included in the treatment system of domestic discharge 144 instead of upgrading its own effluent.

SEGMENT # 08053 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Ohio River Basin in Oldham County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 16 square miles. Estimated 1975 population of this segment is 1523.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08054 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Oldham and Trimble Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 15 square miles. Estimated 1975 population of this segment is 789.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08055 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Trimble County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 123.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08056 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Trimble County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 9 square miles. Estimated 1975 population of this segment is 123.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08057 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Trimble County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 32 square miles. Estimated 1975 population of this segment is 493.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08058 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Trimble County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 92.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08059 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Trimble County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 46.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08060 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Trimble and Carroll Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 287.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08061 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Carroll County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 300.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08062 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Carroll and Gallatin Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 12 square miles. Estimated 1975 population of this segment is 337.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08063 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Gallatin County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 4 square miles. Estimated 1975 population of this segment is 113.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08064 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Gallatin County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 170.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08065 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Ohio River Basin in Gallatin County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 1714.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
14708065	Warsaw (STP)	Municipal

No discharge from Warsaw (STP) due to evaporation and percolation in existing lagoon.

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Code No.	Municipal Priority
14708065	4Ca

Municipal Needs

Warsaw 5 Years-1980: Warsaw needs to put its 3 cell faculative stabilization lagoon system in full operation. Since there is no discharge during dry weather from these lagoons, no additional treatment is recommended. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: Were flow to increase to the point of year-round discharge, then the lagoon system would have to upgrade the effluent to T4B or direct its discharge to the Ohio River where EPA secondary treatment would be adequate.

Alternative Water Quality Management Plans

Warsaw could upgrade its effluent by using one of the lagoon alternatives, by building an advanced waste treatment plant or by diverting flow to the Ohio River.

SEGMENT # 08066 ANALYSIS

Classification: WQL Priority: 1

Location

This segment is located within the Ohio River Basin in Gallatin County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 11 square miles. Estimated 1975 population of this segment is 311.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
14808066	Sugar Bay Restaurant	Domestic
14908066	Sun Oil Co. Service Station	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
14808066	0.16
14908066	0.16

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08067 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Gallatin County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 142.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08068 ANALYSIS

Classification: WQL Priority: 31

Location

This segment is located within the Ohio River Basin in Gallatin, Boone and Kenton Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 81 square miles. Estimated 1975 population of this segment is 6558.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 11 point source discharges in this segment.

Code No.	Discharge	Type
15208068	Big Bone Mobile Hm. Pk.& Grill	Domestic
15308068	Texaco Service Station	Domestic
15408068	Sunoco Service Station	Domestic
15508068	Walton-Verona High School	Domestic
15608068	Sun Oil Co. Serv. Station, KY 14 & I 71	Domestic
15708068	Baker's,Elmo,Boone Inn	Domestic
15808068	Baron Oil Truck Plaza	Domestic
15908068	Days Inn Motel & Restaurant	Domestic
16208068	Standard Oil Service Station	Domestic
16308068	Big Bone Lick State Park	Domestic
16408068	Walton (STP)	Municipal

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
15208068	4.25	
15308068	0.77	
15408068	0.77	
15508068	4.25	
15608068	0.77	
15708068	2.32	
15808068	4.55	
15908068	3.74	
16208068	4.25	
16308068	7.32	
16408068	35.78	54Aa

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Walton 5 Years-1980: Walton's extended aeration plant needs to be upgraded to T4B treatment. No additional capacity is needed. The existing collection system is still under construction and should be expanded further.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Walton could upgrade its effluent using any one of the activated sludge alternatives with the need for nitrification.

Domestic discharges 153, 154, 155, 156 and 157 could be regionalized with the Walton municipal wastewater plant instead of upgrading effluents where necessary.

Domestic discharges 158&159 and 152&163 might be combined into lagoon systems with intermittent discharges rather than upgrading their individual effluents.

SEGMENT # 08069 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 4 square miles. Estimated 1975 population of this segment is 370.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08070 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 741.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08071 ANALYSIS

Classification: WQL Priority: 640

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 45 square miles. Estimated 1975 population of this segment is 18297.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
16508071	Richwood Villa Anna Mobile Home	Domestic
16608071	Florence (STP)	Municipal
16708071	Kentucky Int'l. Raceway	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from Florence.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
16508071	41.36	
16608071	325.26	1105Aa
16708071	10.05	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to urban runoff.

Municipal Needs

Florence 5 Years-1980: The Florence treatment plants (one trickling filter and one contact stabilization plant) need to improve their effluent to T4B. No additional treatment capacity is needed. An infiltration/inflow study should be undertaken and the collection system expanded.

20 Years-1995: No additional treatment is expected. Flow in excess of existing capacity will require expansion or diversion to the Dry Creek wastewater plant of Campbell-Kenton County Sanitary District I.

Alternative Water Quality Management Plans

Detailed analysis must be given to the upgrading of the Florence treatment plants since there are two plants which could be upgraded separately or together.

SEGMENT # 08072 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 1296.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08073 ANALYSIS

Classification: EL Priority: 29

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 33 square miles. Estimated 1975 population of this segment is 3056.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
16808073	Burl Parks Subd.	Domestic
16908073	Hickory Hill Subd.	Domestic
17208073	Boone Creek Subd.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

An alternative to upgrading these domestic discharges would be combining them into a lagoon system with intermittent discharges.

SEGMENT #08074 ANALYSIS

Classification: EL   Priority: 1

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 556.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08075 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 185.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08076 ANALYSIS

Classification: EL Priority: 26

Location

This segment is located within the Ohio River Basin in Boone County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 9 square miles. Estimated 1975 population of this segment is 833.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
17308076	Hebron Elementary School	Domestic
17408076	Chester Goodridge Elem. Sch.	Domestic
17508076	Greater Cincinnati Airport	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharge in this segment could be regionalized with the Dry Creek wastewater plant instead of upgrading their effluent.

SEGMENT # 08077 ANALYSIS

Classification: EL Priority: 11

Location

This segment is located within the Ohio River Basin in Boone and Kenton Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 648.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
17608077	Kentucky Jockey Club	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharge 176 could be regionalized with the Dry Creek wastewater plant instead of upgrading its effluent.

SEGMENT # 08977 ANALYSIS

Classification: EL Priority: 50

Location

This segment is located within the Ohio River Basin in Kenton County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 4 square miles. Estimated 1975 population of this segment is 1800.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
17708977	Park Hill (STP)	Municipal

Municipal discharge 177 will be regionalized to Dry Creek STP.

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Park Hill 5 Years-1980: Park Hill is scheduled to regionalize with the Dry Creek wastewater plant presently under construction.

Alternative Water Quality Management Plans

SEGMENT # 08078 ANALYSIS

Classification: EL Priority: 31

Location

This segment is located within the Ohio River Basin in Campbell County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 21 square miles. Estimated 1975 population of this segment is 966.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 7 point source discharges in this segment.

Code No.	Discharge	Type
17808078	Gejmann Bros. Subd.	Domestic
17908078	Alexandria High School	Domestic
18208078	Douglas Subd.	Domestic
18308078	Newport National Bank	Domestic
18408078	Schabell Motel	Domestic
18508078	St. Joseph Parish Convent	Domestic
18608078	Crestview (STP)	Municipal

Municipal discharge 186 will be regionalized to Dry Creek STP.

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Crestview 5 Years-1980: Crestview is scheduled to be regionalized with the Dry Creek wastewater plant presently under construction.

Alternative Water Quality Management Plans

The domestic discharges in this segment could regionalize with the Dry Creek plant instead of upgrading their individual discharges.

SEGMENT #08079 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Campbell County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 138.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08080 ANALYSIS

Classification: WQL Priority: 67

Location

This segment is located within the Ohio River Basin in Campbell and Pendleton Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 50 square miles. Estimated 1975 population of this segment is 6321.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
18708080	Alexandria (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
18708080	90.82	228Aa

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alexandria 5 Years-1980: The activated sludge plant at Alexandria needs to be upgraded to T4B effluent standards. No additional capacity is needed. The existing collection system is still under construction and should be expanded further.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Alexandria could achieve T4B treatment by using any of the following alternatives: AS 1, 2 or 3.

SEGMENT # 08081 ANALYSIS

Classification: EL   Priority: 0

Location

This segment is located within the Ohio River Basin in Campbell County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 276.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08082 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Pendleton County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 202.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08083 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Pendleton and Bracken Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 245.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08084 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Bracken County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 190.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08085 ANALYSIS

Classification: WQL Priority: 26

Location

This segment is located within the Ohio River Basin in Bracken County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 51 square miles. Estimated 1975 population of this segment is 1865.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
18808085	Brooksville (STP)	Municipal
18908085	Kerns Meat Processing	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
18808085	21.96	100C-
18908085	0.11	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Brooksville 5 Years-1980: The contact stabilization activated sludge plant at Brooksville needs to be upgraded to T4B treatment. No additional capacity is needed. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Brooksville could achieve T4B treatment by using any one of the following alternatives: AS 1, 2 or 3.

SEGMENT #08086 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Bracken County. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 190.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08087 ANALYSIS

Classification: WQL Priority: 4

Location

This segment is located within the Ohio River Basin in Bracken and Mason Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 35 square miles. Estimated 1975 population of this segment is 966.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
19208087	Chatham Rest Home	Domestic
19308087	Bracken Center Apts.	Domestic
19408087	Clopay	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
19208087	0.81
19308087	0.98
19408087	0.0

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

An alternative to upgrade the treatment of domestic discharges 192 and 193 may be to combine them into a lagoon system with intermittent discharge.

SEGMENT # 08088 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Mason County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 695.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08089 ANALYSIS

Classification: EL Priority: 115

Location

This segment is located within the Ohio River Basin in Mason County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 24 square miles. Estimated 1975 population of this segment is 1327.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 14 point source discharges in this segment.

Code No.	Discharge	Type
19508089	Simon Kenton Subd.	Domestic
19608089	Dr. Tenery Residence	Domestic
19708089	KY Dept. of Highway	Domestic
19808089	Ashland Service Station	Domestic
19908089	Parker Tobacco Co.	Industrial
20208089	Washington Methodist Church	Domestic
20308089	Maysville Community College	Domestic
20408089	Maysville Vocations School	Domestic
20508089	Mason County High School	Domestic
20608089	Mason County H.S. Bus Garage	Domestic
20708089	Mason County Middle School	Domestic
20808089	Mason County San.Dist. #2	Domestic
20908089	Mason County San.Dist. #1	Domestic
21208089	Central Center Shopping	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

All discharges in this segment could be combined with Sanitary Districts 1 & 2 (208-209) and create a regional sewer system and wastewater treatment plant to treat all these individual discharges. Regionalization with the Maysville municipal plant is another alternative to upgrading each discharge individually.

SEGMENT #08090 ANALYSIS

Classification: WQL Priority: 177

Location

This segment is located within the Ohio River Basin in Mason County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 251.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
21308090	Bon Haven Subd.	Domestic
21408090	Pinewood Subd.	Domestic
21508090	Wald Mfg.	Industrial
21608090	Mefford Hill	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
21308090	3.09
21408090	6.57
21508090	67.17
21608090	3.09

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharges 213 and 214 could be included in the regionalization plans in segment 08090 (Lawrence Creek) rather than upgrading their individual effluents.

SEGMENT # 08091 ANALYSIS

Classification: EL Priority: 3

Location

This segment is located within the Ohio River Basin in Mason and Lewis Counties. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 71 square miles. Estimated 1975 population of this segment is 1617.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
21708091	Tollesboro High School	Domestic
21808091	Tollesboro Elem. School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08092 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 213.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08093 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 22 square miles. Estimated 1975 population of this segment is 469.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08094 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 61 square miles. Estimated 1975 population of this segment is 1299.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08095 ANALYSIS

Classification: WQL Priority: 6

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 256 square miles. Estimated 1975 population of this segment is 5453.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
21908095	Garrison School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
21908095	0.33

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08096 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 170.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08097 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 43.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08098 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Lewis County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 64.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08099 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 2 square miles. Estimated 1975 population of this segment is 89.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08100 ANALYSIS

Classification: WQL Priority: 1

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 133.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
22208100	Grays Branch Elem. School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
22208100	1.10

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08101 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 4 square miles. Estimated 1975 population of this segment is 177.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08102 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 266.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08103 ANALYSIS

Classification: WQL Priority: 25

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 1644.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
22308103	Wurtland (STP)	Municipal

This municipal discharge will be regionalized to Pond Run STP.

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
22308103	No waste load allocation due to regionalization	51C-

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Wurtland 5 Years-1980: The extended aeration plant at Wurtland needs to be upgraded to T4B treatment. No additional capacity is needed. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: The Wurtland sewer system is scheduled to be included in the proposed Pond Run regional wastewater system.

Alternative Water Quality Management Plans

Wurtland can meet the T4B treatment level by using one of the following alternatives: AS 1, 2 or 4. An alternative to higher degree of treatment would be regionalization with the Pond Run Plant as soon as possible, or by pumping its discharge directly to the Ohio River.

SEGMENT # 08104 ANALYSIS

Classification: EL Priority: 349

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 2339.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
22408104	Raceland (STP)	Municipal

This municipal discharge will be regionalized to Pond Run STP.

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Raceland 5 Years-1980: The primary plant at Raceland is scheduled to be abandoned and the flow diverted to the proposed regional plant at Pond Run. This is in favor of upgrading the treatment to T4B.

Alternative Water Quality Management Plans

SEGMENT # 08105 ANALYSIS

Classification: WQL Priority: 9

Location

This segment is located within the Ohio River Basin in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 133.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
22508105	Ashland Plaza	Domestic
22608105	Greenup Mall Inc.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
22508105 22608105	5.20

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

Domestic discharges in this segment could be regionalized with the proposed regional plant for Sanitary Districts 1 and 2 of Greenup and Boyd Counties.

SEGMENT # 08106 ANALYSIS

Classification: EL Priority: 12

Location

This segment is located within the Ohio River Basin in Greenup and Boyd Counties. Exhibit B- 7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 15 square miles. Estimated 1975 population of this segment is 1375.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 8 point source discharges in this segment.

Code No.	Discharge	Type
22708106	Oakwood Mobile Home Trailer Park	Domestic
22808106	Green Acres Trailer Park	Domestic
22908106	Ashland St. Voc. Tech.School	Domestic
23208106	Air Product & Chemical	Industrial
23308106	National Mine Services	Domestic
23408106	Ashland Oil Service Station	Domestic
23508106	Humble Oil Service Station	Domestic
23608106	Breezeland Swim Club	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

Discharges in this segment could be regionalized with the proposed regional plant for Sanitary Districts 1 and 2 of Greenup and Boyd counties.

SEGMENT # 08107 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Ohio River Basin in Boyd County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 118.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08108 ANALYSIS

Classification: WQL Priority: 2

Location

This segment is located within the Ohio River Basin in Boyd County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 6 square miles. Estimated 1975 population of this segment is 85.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
23708108	Catletts Ck. Elem. School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
23708108	1.30

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10001 ANALYSIS

Classification: EL Priority: 0

Location

This segment is located within the Tradewater River Basin in Crittenden and Union Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 16 square miles. Estimated 1975 population of this segment is 262.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 1.20 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA in November 1967 is presented in Exhibit A-1t.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10002 ANALYSIS

Classification: WQL Priority: 42

Location

This segment is located within the Tradewater River Basin in Union County. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 48 square miles. Estimated 1975 population of this segment is 3585.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are 3 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
23810002	Sturgis (STP)	Municipal
23910002	Bill's Truck Stop	Domestic
24210002	Onan's Trailer Park	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
23810002	139.72	68Ca
23910002	0.77	
24210002	1.30	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Sturgis 5 Years-1980: The Sturgis oxidation ditch and lagoon achieve an acceptable treatment level during summer months. To achieve year-round nitrification, additional units are required. The treatment system needs to expand. An infiltration/inflow study should be undertaken and the collection system expanded.

20 Years-1995: Advanced wastewater treatment may be required by 1995 but there will be no need for expanding capacity.

Alternative Water Quality Management Plans

Alternatives to achieve year-round nitrification are listed in Exhibit 4.11t.

Domestic discharges 239 and 242 could be regionalized with the Sturgis municipal plant rather than upgrading their discharge.

SEGMENT # 10003 ANALYSIS

Classification: WQL Priority: 102

Location

This segment is located within the Tradewater River Basin in Crittenden and Union Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 298.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 1.09 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
24310003	Hudson's Restaurant & Motel	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
24310003	1.55

This segment is classified water quality limited because of non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10004 ANALYSIS

Classification: WQL Priority: 476

Location

This segment is located within the Tradewater River Basin in Union and Webster Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 139 square miles. Estimated 1975 population of this segment is 5165.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are 2 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA water quality data for 1967 are insufficient to describe existing water quality of this segment.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
24410004	Clay	Municipal
24510004	Dixon Elem. School	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are non-point source discharges in this segment as a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
24410004	26.85	901Ca
24510004	2.32	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Clay 5 Years-1980: The existing Imhoff tank at Clay should be upgraded to T4B treatment. The plant should be designed with capacity to include flow from Wheatcroft. An infiltration/inflow study should be conducted and the sewer system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Clay has a wide range of alternatives to achieve T4B treatment. They include any one of the following: TF 1-4, AS 1, 2 or 4 and lagoon options.

SEGMENT # 10005 ANALYSIS

Classification: WQL Priority: 102

Location

This segment is located within the Tradewater River Basin in Crittenden, Webster and Caldwell Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 130 square miles. Estimated 1975 population of this segment is 2057.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.82 cfs.

Water Quality Data

There are 5 water quality monitoring stations in this segment and 2 additional secondary monitoring stations are recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA water quality data for 1967 indicate low pH conditions. These acidic conditions are caused by acid mine drainage.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
24710005	Alexandria Stone	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
24710005	0.0

This segment is classified water quality limited because of non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10006 ANALYSIS

Classification: WQL Priority: 72

Location

This segment is located within the Tradewater River Basin in Webster County. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 4494.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
24810006	Providence (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD	Municipal Priority
24810006	40.03	232Ca

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Providence 5 Years-1980: The trickling filter plant at Providence needs to be upgraded to T4B treatment with no additional capacity needed. An infiltration/inflow study should be conducted and the existing system expanded.

20 Years-1995: No additional treatment is expected. However, an expansion in capacity will be required.

Alternative Water Quality Management Plans

Providence could meet T4B treatment with one of the following methods: TF 1-4.

SEGMENT # 10007 ANALYSIS

Classification: WQL Priority: 100

Location

This segment is located within the Tradewater River Basin in Crittenden, Webster and Caldwell Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 140.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.59 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Water quality standards violations in this segment are a result of non-point source discharges, for which no waste load allocations were computed.

This segment is classified water quality limited because of non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10008 ANALYSIS

Classification: WQL Priority: 113

Location

This segment is located within the Tradewater River Basin in Webster and Hopkins Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 151 square miles. Estimated 1975 population of this segment is 3488.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring stations in this segment and an additional secondary monitoring station is recommended.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
24910008	County Meadows Subd.	Domestic
25210008	Nebo High School	Domestic
25310008	W. Hopkins High School	Domestic
25410008	Pittsburg & Midway Coal Co.	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
24910008	4.88
25210008	0.65
25310008	1.46
25410008	1.93

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10009 ANALYSIS

Classification: WQL Priority: 152

Location

This segment is located within the Tradewater River Basin in Hopkins County. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 48 square miles. Estimated 1975 population of this segment is 3439.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
25510009	Earlington (STP)	Municipal
25610009	Chateau Mobile Home Park	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
25510009	24.39	179C-
25610009	2.76	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Earlington 5 Years-1980: Earlington's trickling filter needs to be upgraded to T4B treatment level. No additional capacity is needed. An infiltration/inflow study should be conducted and the sewer system expanded.

20 Years-1995: No additional treatment is expected.

Alternative Water Quality Management Plans

Trickling filter alternatives TF 1-4 are available to achieve T4B effluent.

SEGMENT # 10010 ANALYSIS

Classification: WQL Priority: 103

Location

This segment is located within the Tradewater River Basin in Caldwell and Hopkins Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 123 square miles. Estimated 1975 population of this segment is 2530.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.22 cfs.

Water Quality Data

There are 4 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1967 and 1968 indicate low pH conditions. These acidic conditions are caused by acid mine drainage. USGS Water Resources Data for 1972 and 1973 indicate high dissolved manganese concentrations.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Water quality standards violations in this segment are a result of non-point source discharges, for which no waste load allocations were computed.

This segment is classified water quality limited because of non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10011 ANALYSIS

Classification: WQL Priority: 6

Location

This segment is located within the Tradewater River Basin in Caldwell County. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 53 square miles. Estimated 1975 population of this segment is 1035.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
25710011	Frank Young's Subd.	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
25710011	5.78

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10012 ANALYSIS

Classification: WQL Priority: 203

Location

This segment is located within the Tradewater River Basin in Caldwell and Hopkins Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 42 square miles. Estimated 1975 population of this segment is 4019.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.22 cfs.

Water Quality Data

There are 3 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1967 indicate low pH conditions are caused by acid mine drainage.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
25810012	Dawson Springs (STP)	Municipal
25910012	4-H Camp for Univ. of Kentucky	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
25810012	37.40	285Ca
25910012	3.92	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Dawson Springs 5 Years-1980: Dawson Springs' trickling filter plant needs to be upgraded to T4B treatment. No additional capacity is needed. An infiltration/inflow study should be conducted and the sewer system should be expanded throughout the corporate city limits.

20 Years-1995: The treatment plant will require expansion from .32 mgd to .40 mgd.

Alternative Water Quality Management Plans

Domestic discharge 259 could be regionalized with Dawson Springs rather than upgrading its effluent. It is within one mile of the municipal plant.

There has been a proposal in the Pennyrile ADD study to relocate the existing trickling filter plant to better serve the newly sewered areas in Dawson Springs. This decision would be subject to detailed analysis but would not change the treatment level required.

Trickling filter alternatives TF 1-4 are available or if the plant is to be moved, alternatives TF 1-4, AS 1, 2 or 4 and lagoon options are available.

SEGMENT # 10013 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Tradewater River Basin in Caldwell and Christian Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 26 square miles. Estimated 1975 population of this segment is 624.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 10014 ANALYSIS

Classification: WQL Priority: 105

Location

This segment is located within the Tradewater River Basin in Hopkins and Christian Counties. Exhibit B-2.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 136 square miles. Estimated 1975 population of this segment is 4159.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 0.0 cfs.

Water Quality Data

There are 6 water quality monitoring stations in this segment and an additional secondary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1967 indicate acidic conditions near Dawson Springs and neutral conditions (pH ≈ 7.0) near headwaters where less acid mine drainage occurs.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
26210014	Pennyrile State Park	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of acid mine drainage.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocation:

Code No.	TMDL #/day TOD
26210014	0.81

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment and non-point source discharges due to acid mine drainage.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 11001 ANALYSIS

Classification: EL Priority: 6

Location

This segment is located within the Tygart's Creek Basin in Greenup County. Exhibit B- 81m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 80 square miles. Estimated 1975 population of this segment is 3500.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.2 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional secondary monitoring station is planned in the future.
Water quality data for this segment are presented in Exhibit A-1t.

Miscellaneous USGS Water Quality Data for 1970 are insufficient to describe existing water quality of this segment. USGS Water Resources Data for 1970, 1972 and 1973 indicate that water temperature conditions for 1970, 1972 and 1973 are satisfactory.

Point Source Discharges

There is one point source discharge in this segment.

Code No.	Discharge	Type
26311001	Greenup County Voc. School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 11002 ANALYSIS

Classification: EL Priority: 1

Location

This segment is located within the Tygart's Creek Basin in Greenup County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 21 square miles. Estimated 1975 population of this segment is 930.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.0 cfs.

Water Quality Data

There are no existing water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 11003 ANALYSIS

Classification: WQL Priority: 1

Location

This segment is located within the Tygart's Creek Basin in Greenup County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 443.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.0 cfs.

Water Quality Data

There are no existing water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharge in this segment.

Code No.	Discharge	Type
26411003	Sunshine Elem. School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD
26411003	0.65

This segment is classified water quality limited because of point source discharge requiring advanced wastewater treatment.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #11004 ANALYSIS

Classification: EL Priority: 3

Location

This segment is located within the Tygart's Creek Basin in Greenup and Carter Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 57 square miles. Estimated 1975 population of this segment is 2499.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.2 cfs.

Water Quality Data

There are no existing water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 11005 ANALYSIS

Classification: EL Priority: 2

Location

This segment is located within the Tygart's Creek Basin in Carter County. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 48 square miles. Estimated 1975 population of this segment is 1944.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.0 cfs.

Water Quality Data

There are no existing water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
26511005	Carter City Consolidated School	Domestic

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate that for the existing and estimated 1980 and 1995 waste loads, there are no water quality standards violations in this segment.

No waste load allocations were done for the Effluent Limited segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 11006 ANALYSIS

Classification: WQL Priority: 65

Location

This segment is located within the Tygart's Creek Basin in Carter and Greenup Counties. Exhibit B-8.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 127 square miles. Estimated 1975 population of this segment is 6404.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year flow of this segment is 0.0 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.
Water quality data for this segment are presented in Exhibit A-1t.

Miscellaneous USGS Water Quality data for 1970 are insufficient to describe existing water quality of this segment.

Point Source Discharges

There are 6 point source discharges in this segment.

Code No.	Discharge	Type
26611006	Olive Hill (STP)	Municipal
26711006	West Carter County H.S.	Domestic
26811006	Standard Oil Service Station	Domestic
26911006	Lawton Elementary School	Domestic
27211006	Carter Caves State Park	Domestic
27311006	Upper Tygart's Jr. H.S.	Domestic

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Results of the water quality modeling by UK/UL indicate the following waste load allocations:

Code No.	TMDL #/day TOD	Municipal Priority
26611006	29.27	200Ca
26711006	2.71	
26811006	0.36	
26911006	0.49	
27211006	0.39	
27311006	0.77	

This segment is classified water quality limited because of point source discharges requiring advanced wastewater treatment.

Municipal Needs

Olive Hill 5 Years-1980: The Olive Hill trickling filter plant needs to be upgraded to T4B treatment. No additional capacity is needed. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: No additional treatment is expected but the capacity will need to be expanded.

Alternative Water Quality Management Plans

1. Any one of the trickling filter alternatives (TF 1-4) would meet the need for T4B treatment.
2. Domestic discharge 267 could be included in the Olive Hill municipal system rather than upgrading its effluent.

SEGMENT # 08200 ANALYSIS

Classification: WQL Priority: 4458

Location

This is a segment of the main stem of the Ohio River located in Boyd County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 4 square miles. Estimated 1975 population of this segment is 68.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. The samples indicate relatively high cadmium concentrations.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
27408200	Semet Solvay	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from Cattletsburg.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD
27408200	See Exhibit 5.2t

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Municipal Needs

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT #08201 ANALYSIS

Classification: WQL Priority: 28384

Location

This is a segment of the main stem of the Ohio River located in Boyd and Greenup Counties. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 7 square miles. Estimated 1975 population of this segment is 33848.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1966 through 1972 indicate relatively high concentration of cadmium.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
27508201	Ashland (STP)	Municipal
27608201	Armco	Industrial
27708201	Mansbach	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage and urban runoff from Ashland and Russell Metropolitan Area.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
27508201	9358	997Aa
27608201	1000	
27708201		
San. Dist. 1&2		47A-

This segment is classified water quality limited because of non-point source discharges due to combined sewage and urban runoff.

Municipal Needs

Ashland

5 Years-1980: Ashland needs to upgrade its primary wastewater plant to EPA-defined secondary. Additional capacity is needed. An infiltration/inflow study should be conducted and the collection system expanded. The combined sewer overflow problem must also be corrected.

20 Years-1995: No additional treatment is expected. However, this would be subject to conformation by water quality measurements.

Sanitary District 1 & 2 (Greenup & Boyd)

5 Years-1980: This regional wastewater treatment plant is being constructed to serve a portion of Greenup and Boyd counties. An infiltration/inflow study should be conducted and the collection system should be expanded.

20 Years-1995: No additional treatment is expected subject to water quality measurements in the Ohio River.

Alternative Water Quality Management Plans

For the alternative methods of treatment for Ashland, see Exhibit 4.11t.

Sanitary Districts 1 & 2 could supply secondary treatment using an activated sludge, trickling filter or lagoon system. For details see Exhibit 4.11t.

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08202 ANALYSIS

Classification: WQL Priority: 291

Location

This is a segment of the main stem of the Ohio River located in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 10764.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
27808202	Flatwoods-Russell (STP)	Municipal
27908202	Worthington (STP)	Municipal
28208202	C&O/B&O RR (Greenup)	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from Worthington and Flatwoods.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
27808202 27908202	497	
28208202	153	
Greenup Co. Env. Commission - Pond Run	600	18A-

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Flatwoods-Russell & Worthington

5 Years-1980: The primary plant at Flatwoods and Russell and the extended aeration plant at Worthington are to be abandoned and the flow diverted to the Pond Run Regional Plant with discharge to the Ohio River. An infiltration/inflow study should be conducted in these areas and the collection system expanded.

20 Years-1995: No additional treatment is expected, subject to conformation of water quality measurements in the Ohio River.

Greenup Co. Environmental Commission-Pond Run

5 Years-1980: The Pond Run regional treatment plant (EPA-defined secondary) is to be constructed to serve Flatwoods, Worthington, Russell, Raceland and Wurtland.

20 Years-1995: No additional treatments is expected subject to results of water quality monitoring.

Alternative Water Quality Management Plans

Pond Run could supply secondary treatment using an activated sludge, trickling filter or lagoon system. For details see Exhibit 4.11t.

SEGMENT # 08203 ANALYSIS

Classification: WQL Priority: 10321

Location

This is a segment of the main stem of the Ohio River located in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 10 square miles. Estimated 1975 population of this segment is 399.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
28308203	E.I. Dupont (Greenup)	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD
29308203	100

This segment is classified water quality limited because of non-point source discharges from upstream segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT #08204 ANALYSIS

Classification: WQL Priority: 1

Location

This is a segment of the main stem of the Ohio River located in Greenup County. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 1354.

Additional details of the basic planning data are presented in Exhibit Bl.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-lt.

EPA Water Quality Data for 1969 indicate low DO concentrations.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
28408204	South Shore (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit Bl.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
28408204	96	4C-

This segment is classified water quality limited because of non-point source discharges from upstream segments.

Municipal Needs

South Shore 5 Years-1980: The South Shore extended aeration plant is in need of sludge handling facilities according to the Fivco ADD study recommendation and state inspection recommendation. No additional capacity is required. However, filtration of the secondary effluent is needed to meet EPA-defined secondary treatment.

20 Years-1995: No additional treatment needed subject to conformation by water quality data.

Alternative Water Quality Management Plans

SEGMENT # 08205 ANALYSIS

Classification: WQL Priority: 104

Location

This is a segment of the main stem of the Ohio River located in Greenup, Lewis and Mason Counties. Exhibit B-7.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 53 square miles. Estimated 1975 population of this segment is 3310.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There are 2 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment are presented in Exhibit A-1t.

EPA Water Quality Data for 1969 are insufficient to analize the existing water quality conditon of this segment.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
28508205	Vanceburg (STP)	Municipal
28608205	Frankfort Material	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from Maysville.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
28508205	60	4C-
28608205	See Exhibit 5.2t	

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Municipal Needs

Vanceburg 5 Years-1980: Vanceburg has adequate treatment and needs no additional capacity. However, the State 1974 needs survey has allocated money for a filtration unit to polish the effluent to meet EPA-defined secondary treatment.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT #08206 ANALYSIS

Classification: WQL Priority: 10

Location

This is a segment of the main stem of the Ohio River located in Mason and Bracken Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 23 square miles. Estimated 1975 population of this segment is 9618.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 9900 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
28708206	Maysville (STP)	Municipal
40008206	Eastern KY RECC	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
28708206	516	11C-
Augusta		18Ca

This segment is classified water quality limited because of non-point source discharges from upstream segments.

Cooling waters have not received waste load allocations.

Municipal Needs

Maysville 5 Years-1980: A secondary activated sludge unit is being added to Maysville primary plant and this will satisfy the 1980 needs for treatment and capacity. In addition an infiltration/inflow study should be undertaken along with an expansion of the collection system. The combined sewer overflows should be abated.

20 Years-1995: No additional treatment is expected subject to conformation of water quality data.

Augusta 5 Years-1980: Augusta will need a secondary treatment plant (EPA-defined secondary) and an additional collection system to meet the 1980 needs. The Buffalo Trace ADD study recommended an extended aeration package plant for Augusta. Lagoons and fixed film treatment processes should also be investigated. An infiltration/inflow study should be conducted on the existing collection system.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

Augusta could supply secondary treatment using an activated sludge, trickling filter or lagoon system. For details see Exhibit 4.11t.

SEGMENT #08207 ANALYSIS

Classification: EL Priority: 8

Location

This is a segment of the main stem of the Ohio River located in Bracken, Pendleton and Campbell Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 25 square miles. Estimated 1975 population of this segment is 771.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and 2 additional primary monitoring stations are recommended.

Water quality data for this segment are presented in Exhibit A-1t.

EPA Water Quality Data for 1958 through 1971 indicate low DO concentrations. According to ORSANCO's 1974 water quality data river conditions have improved to the point where water quality parameters are acceptable 100% of the time.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
28808207	C&O/B&O RR (Silver Grove)	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD
28808207	23

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08208 ANALYSIS

Classification: WQL Priority: 100

Location

This is a segment of the main stem of the Ohio River located in Campbell and Kenton Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 8 square miles. Estimated 1975 population of this segment is 53871.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from Campbell and Kenton Region.

Waste Load Allocations and Priority

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Municipal Needs

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08209 ANALYSIS

Classification: WQL Priority: 270

Location

This is a segment of the main stem of the Ohio River located in Kenton and Boone Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 17 square miles. Estimated 1975 population of this segment is 170019.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1969, 1970 and 1973 indicate low DO concentrations. According to ORSANCO Water Quality Data for 1974, the water quality condition has been improved and they indicate that the criteria for water quality parameters are met most of the time in 1974.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
28908209	Bromley (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage and urban runoff from Covington Region.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
28908209 Campbell-Kenton Co. San. Dist. #1 (Dry Creek)	12080	191Aa

This segment is classified water quality limited because of non-point source discharges due to combined sewage and urban runoff.

Municipal Needs

Bromley 5 Years-1980: The primary plant at Bromley is to be converted to a pump station to divert flow to the Dry Creek Plant (Campbell-Kenton Sanitary District 1) now under construction. The tributary area should undergo an infiltration/inflow study and the collection system expanded. The combined sewer overflows should be abated.

Dry Creek 5 Years-1980: Presently under construction, the Dry Creek Plant will serve Campbell-Kenton Sanitary District 1 with EPA-defined secondary treatment and seasonal nitrification. The collection system is intended to include many of the small treatment plants (i.e. Park Hills and Crestview) presently operating in the area.

20 Years-1995: No additional treatment is expected. The plant design allows for expansion and year-round nitrification.

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08210 ANALYSIS

Classification: WQL Priority: 2

Location

This is a segment of the main stem of the Ohio River located in Boone and Gallatin Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 34 square miles. Estimated 1975 population of this segment is 2220.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1968 through 1973 indicate low DO concentrations. ORSANCO Water Quality Data for 1974 indicate low DO concentrations in July and September.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
40108210	Cinci. Gas & Electric	Power Plant

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges from upstream segments.

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08211 ANALYSIS

Classification: WQL Priority: 6910

Location

This is a segment of the main stem of the Ohio River located in Gallatin and Carroll Counties. Exhibit B-6.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 898.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There is 1 water quality monitoring stations in this segment. No additional monitoring stations are planned in the future.
Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1972 indicate low DO concentrations.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
29208211	Dow Corning	Industrial
29308211	M&T Chemical	Industrial
40208211	Kentucky Utilities	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from Carrollton.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
29208211	830	
29308211	960	
Ghent	30	3C-

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Cooling waters have not received waste load allocations.

Municipal Needs

Ghent 5 Years-1980: Ghent needs to supply secondary treatment (EPA-defined) for its wastewater and a collection system to transport the wastewater.

20 Years-1995: No further treatment is expected subject to conformation by water quality data.

Carrollton 5 Years-1980: The combined sewer overflows should be abated.

Alternative Water Quality Management Plans

Ghent could construct a secondary treatment facility of the activated sludge, trickling filter or lagoon type (for details see Exhibit 4.11t) or it could divert its flow to the wastewater plant at Carrollton approximately 6 miles away.

It should be noted that the Carrollton plant discharges into the Kentucky River.

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08212 ANALYSIS

Classification: EL Priority: 97

Location

This is a segment of the main stem of the Ohio River located in Carroll, Trimble and Oldham Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 54 square miles. Estimated 1975 population of this segment is 3077.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. These samples indicate low DO concentrations and, also, they indicate high NH_3-N concentrations at a few sanitary treatment plant effluents.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
29408212	Kawneer	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
29408212	See Exhibit 5.2t	
Milton	54	5Ca

Municipal Needs

Milton 5 Years-1980: Milton needs to supply secondary treatment (EPA-defined) for its wastewater and build a collection system to transport the flow.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

Milton could supply secondary treatment using an activated sludge, trickling filter or lagoon system. For details see Exhibit 4.11t.

SEGMENT # 08213 ANALYSIS

Classification: WQL Priority: 4546

Location

This is a segment of the main stem of the Ohio River located in Oldham and Jefferson Counties. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 14 square miles. Estimated 1975 population of this segment is 380.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 12100 cfs.

Water Quality Data

There are 3 water quality monitoring stations in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1961 through 1973 indicate low DO concentrations. ORSANCO Water Quality Data for 1974 indicate improved water quality conditions over the previous years except in July, when they indicate low DO concentrations.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
29508213	Nugent Sand Co.	Industrial

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage and urban runoff from Louisville Metropolitan area.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
29508213 Louisville- North Co.	See Exhibit 5.2t 1946	1444Ab

This segment is classified water quality limited because of non-point source discharges due to combined sewage and urban runoff.

Municipal Needs

North County 5 Years-1980: The North County wastewater treatment plant has been proposed by the Jefferson County Sanitary Sewer Master Plan and the 201 study now being concluded. Final design is beginning on the proposed secondary treatment plant (EPA-defined) to serve the northern section of Jefferson County. Expansion of the collection system is needed and an infiltration/inflow study of the existing system is recommended.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data. Expansion of facilities might be necessary.

Alternative Water Quality Management Plans

For alternative methods of treatment see Exhibit 4.11t.

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08214 ANALYSIS

Classification: WQL Priority: 13655

Location

This is a segment of the main stem of the Ohio River located in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 9 square miles. Estimated 1975 population of this segment is 500000.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. These samples indicate high temperatures and high NH_3-N concentrations. They also indicate acidic and basic conditions at a few industrial discharges.

Point Source Discharges

There are 6 point source discharges in this segment.

Code No.	Discharge	Type
29608214	Louisville (MSD)	Municipal
29708214	Borden Chemical	Industrial
29808214	American Synthetic Rubber Co.	Industrial
40308214	Public Serv. of Indiana	Power Plant
40408214	Louisville Gas & Electric (Paddy Run)	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage and urban runoff from Louisville Metropolitan area.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
29608214	50040	14999Ab
29708214	See Exhibit 5.2t	
29808214	700	

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges due to combined sewage and urban runoff.

Municipal Needs

Louisville (MSD) 5 Years-1980: Louisville is currently expanding its primary treatment facilities by adding secondary activated sludge treatment. In order to meet EPA-defined secondary treatment of 30 mg/L suspended solids effluent,filtration may be required. An infiltration/inflow study should be undertaken and the collection system expanded. The combined sewer overflows should be abated.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08215 ANALYSIS

Classification: WQL Priority: 12930

Location

This is a segment of the main stem of the Ohio River located in Jefferson County. Exhibit B-5.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 5 square miles. Estimated 1975 population of this segment is 18000.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1969 through 1973 indicate low DO concentrations. ORSANCO Water Quality Data for 1974 also indicate low DO concentrations in July.

Point Source Discharges

There are 4 point source discharges in this segment.

Code No.	Discharge	Type
30308215	Shively (STP)	Municipal
30408215	Stauffer Chemical	Industrial
40508215	Louisville Gas & Electric (Cane Run)	Power Plant
40608215	Louisville Gas & Electric (Miller)	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from Louisville Metropolitan area.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
30308215	708	
30408215	230	
Louisville-West County	5560	6309Ab

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Shively 5 Years-1980: The primary plant at Shively is being converted into a pump station to divert flow to the Louisville (MSD) plant.

Pond Creek-West County

5 Years-1980: A secondary wastewater treatment plant has been proposed in Jefferson County to serve the Pond Creek and West County areas. The existing sewer system needs an infiltration/inflow study and the collection system should be expanded.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data. Expansion of facilities will be necessary.

Alternative Water Quality Management Plans

Pond Creek-West County could supply secondary treatment using an activated sludge, trickling filter or lagoon system. For details see Exhibit 4.1lt.

SEGMENT # 08216 ANALYSIS

Classification: WQL Priority: 139317

Location

This is a segment of the main stem of the Ohio River located in Meade and Hardin Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 38 square miles. Estimated 1975 population of this segment is 3596.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1970 and 1971 indicate low DO concentrations. They also indicate both high temperature and basic conditions at a few industrial discharges.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
30508216	West Point (STP)	Municipal
30608216	Olin Chemical	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
30508216	72	8C-
30608216	2000	

This segment is classified water quality limited because of non-point source discharges from upstream segments.

Municipal Needs

West Point 5 Years-1980: The primary plant at West Point needs to be upgraded to EPA-defined secondary treatment. An infiltration/inflow study should be conducted of the existing collection system which is adequate to sewer the 1980 population.

20 Years-1995: No additional treatment is expected subject to conformation of water quality data.

Alternative Water Quality Management Plans

For details on alternatives for upgrading the West Point primary plant see Exhibit 4.11t.

SEGMENT # 08217 ANALYSIS

Classification: EL Priority: 6791

Location

This is a segment of the main stem of the Ohio River located in Meade, Breckinridge and Hancock Counties. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 61 square miles. Estimated 1975 population of this segment is 5170.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1970 and 1971 indicate low DO concentrations.

Point Source Discharges

There are 3 point source discharges in this segment.

Code No.	Discharge	Type
30708217	Brandenburg (STP)	Municipal
30808217	Cloverport (STP)	Municipal
30908217	Western Kraft	Industrial

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
30708217	59	10C-
30808217	69	8C-
30908217	3850	

Municipal Needs

Brandenburg 5 Years-1980: The primary plant at Brandenburg needs to be upgraded to EPA-defined secondary treatment. The existing collection system should be expanded and an infiltration/inflow study should be undertaken.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Cloverport 5 Years-1980: The primary wastewater treatment plant at Cloverport is presently undergoing upgrading to secondary treatment (activated sludge). In order to meet EPA-defined secondary the effluent may need to be filtered. The existing collection system should be expanded and and infiltration/inflow study conducted.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

For alternative methods of treatment for Brandenburg see Exhibit 4.11t.

SEGMENT # 08218 ANALYSIS

Classification: EL Priority: 5772

Location

This is a segment of the main stem of the Ohio River located in Hancock County. Exhibit B-4.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 9 square miles. Estimated 1975 population of this segment is 1727.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and 2 additional primary monitoring stations are recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1970 indicate low DO concentrations. At a few industrial and municipal effluents, they indicate both high temperature and high NH_3-N concentrations.

Point Source Discharges

There are 5 point source discharges in this segment.

Code No.	Discharge	Type
31208218	Wescor	Industrial
31308218	Hawesville (STP)	Municipal
31408218	National Aluminum	Industrial
31508218	National Southwire Aluminum	Industrial
40708218	Big Rivers RECC (Coleman)	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
31208218	2210	
31308218	60	5Ca
31408218	See Exhibit 5.2t	
31508218	See Exhibit 5.2t	

Cooling waters have not received waste load allocations.

Municipal Needs

Hawesville 5 Years-1980: The existing activated sludge plant at Hawesville is adequate with the addition of a filtration unit to polish the effluent to meet EPA-defined secondary treatment. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: The activated sludge plant needs to be expanded but no further treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

SEGMENT # 08219 ANALYSIS

Classification: WQL Priority: 13394

Location

This is a segment of the main stem of the Ohio River located in Hancock and Daviess Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 12 square miles. Estimated 1975 population of this segment is 2734.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. These data are insufficient to describe existing water quality of this segment.

Point Source Discharges

There are 7 point source discharges in this segment.

Code No.	Discharge	Type
31608219	Lewisport (STP)	Municipal
31708219	Green River Steel	Industrial
31808219	Glenmore Dist.	Industrial
31908219	Medley Dist.	Industrial
32208219	Fleishman Dist.	Industrial
32308219	W.R. Grace	Industrial
40808219	Owensboro Municipal Utilities	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage from Owensboro.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
31608219	42	8Ca
31708219	See Exhibit 5.2t	
31808219	60	
31908219	35	
32208219	76	
32308219	255	

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Municipal Needs

Lewisport 5 Years-1980: The Lewisport activated sludge plant is adequate for 1980 needs with the addition of a filtration unit to polish the secondary effluent to meet EPA-defined secondary treatment. An infiltration/inflow study should be conducted and the collection system expanded.

20 Years-1995: The wastewater treatment plant in Lewisport will need expansion but no additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08220 ANALYSIS

Classification: WQL Priority: 155

Location

This is a segment of the main stem of the Ohio River located in Daviess and Henderson Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 18 square miles. Estimated 1975 population of this segment is 55059.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment. No additional monitoring stations are planned in the future.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1970 and 1971 indicate both high NH_3-N concentrations and high temperature.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
32408220	Owensboro (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from Owensboro.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
32408220	4148	604Aa

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Owensboro 5 Years-1980: The Owensboro primary wastewater plant is being upgraded to secondary treatment activated sludge. An infiltration/inflow study should be conducted and the existing system expanded. Corrective action needs to be taken regarding the combined sewer overflows.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

SEGMENT # 08221 ANALYSIS

Classification: WQL Priority: 840

Location

This is a segment of the main stem of the Ohio River located in Henderson County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 24 square miles. Estimated 1975 population of this segment is 394.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There is 1 water quality monitoring station in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t.

EPA Water Quality Data for 1958 through 1967 indicate basic conditions. EPA Water Quality Data for 1970 and 1971 indicate high NH_3-N concentrations. ORSANCO Water Quality Data for 1974 indicate low DO concentrations in September.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
40908221	Henderson Utilities	Power Plant

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point discharges in this segment are a result of combined sewage from Henderson.

Waste Load Allocations and Priority

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges due to combined sewage.

Municipal Needs

Alternative Water Quality Management Plans

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08222 ANALYSIS

Classification: WQL Priority: 125

Location

This is a segment of the main stem of the Ohio River located in Henderson and Union Counties. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 24 square miles. Estimated 1975 population of this segment is 24909.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 14300 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment but a primary monitoring station is recommended.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. These indicate basic conditions (high pH), high NH_3-N concentrations and high temperatures.

Point Source Discharges

There is 1 point source discharge in this segment.

Code No.	Discharge	Type
32508222	Henderson (STP)	Municipal

Effluent characteristics for the point source discharge of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of urban runoff from Henderson.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
32508222	1427	177Aa

This segment is classified water quality limited because of non-point source discharges due to urban runoff.

Municipal Needs

Henderson 5 Years-1980: The primary wastewater treatment plant at Henderson is being upgraded to secondary treatment (fixed film process). An infiltration/inflow study should be undertaken and the combined sewer overflows abated. The collection system should be expanded.

20 Years-1995: No additional treatment is expected subject to conformation by water quality data.

Alternative Water Quality Management Plans

SEGMENT # 08223 ANALYSIS

Classification: EL Priority: 0

Location

This is a segment of the main stem of the Ohio River located in Union County. Exhibit B-3.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 15 square miles. Estimated 1975 population of this segment is 267.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 20000 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08224 ANALYSIS

Classification: EL Priority: 1

Location

This is a segment of the main stem of the Ohio River located in Crittenden and Livingston Counties. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 60 square miles. Estimated 1975 population of this segment is 1208.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 20000 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08225 ANALYSIS

Classification: EL Priority: 1

Location

This is a segment of the main stem of the Ohio River located in Livingston County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 21 square miles. Estimated 1975 population of this segment is 485.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 48500 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Municipal Needs

Alternative Water Quality Management Plans

SEGMENT # 08226 ANALYSIS

Classification: WQL Priority: 130

Location

This is a segment of the main stem of the Ohio River located in McCracken and Ballard Counties. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 13 square miles. Estimated 1975 population of this segment is 30410.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 48500 cfs.

Water Quality Data

There are 2 water quality monitoring stations in this segment and an additional primary monitoring station is recommended.

Water quality data for this segment is presented in Exhibit A-1t. USGS Water Resources Data for 1969 and 1970 indicate high iron and manganese concentrations during winter months. USGS Water Resources Data for 1971 through 1973 indicate satisfactory water quality conditions in the Ohio River.

Point Source Discharges

There are 2 point source discharges in this segment.

Code No.	Discharge	Type
32608226	Paducah (STP)	Municipal
41008226	TVA (Shawnee)	Power Plant

Effluent characteristics for the point source discharges of this segment are presented in Exhibit B1.4t.

Non-Point Source Discharges

Non-point source discharges in this segment are a result of combined sewage and urban runoff from Paducah.

Waste Load Allocations and Priority

Code No.	TMDL #/day TOD	Municipal Priority
32608226	1664	20B-

Cooling waters have not received waste load allocations.

This segment is classified water quality limited because of non-point source discharges due to combined sewage and urban runoff.

Municipal Needs

Paducah 5 Years-1980: The primary plant in Paducah needs to be upgraded to EPA secondary treatment. Final design is completed on the secondary activated sludge expansion. An infiltration/inflow study should be undertaken and the combined sewer overflows abated. The existing collection system should be expanded.

20 Years-1995: No additional treatment is expected subject to conformation of water quality data.

Alternative Water Quality Management Plans

For alternative methods of treatment see Exhibit 4.11t.

Treatment of combined sewage overflows is required prior to discharge to the receiving water.

SEGMENT # 08227 ANALYSIS

Classification: EL Priority: 0

Location

This is a segment of the main stem of the Ohio River located in Ballard County. Exhibit B-1.1m shows the location of this segment in relation to its neighboring segments.

Basic Planning Data

This segment has an area of 3 square miles. Estimated 1975 population of this segment is 50.

Additional details of the basic planning data are presented in Exhibit B1.2t.

Segment Hydrology

The estimated 7-day 10-year low flow of this segment is 48500 cfs.

Water Quality Data

There are no water quality monitoring stations in this segment and none are planned in the future.

Water quality data from grab samples taken by EPA is presented in Exhibit A-1t. These samples indicate low DO concentrations.

Point Source Discharges

There are no point source discharges in this segment.

Non-Point Source Discharges

There are no non-point source discharges in this segment.

Waste Load Allocations and Priority

Municipal Needs

Alternative Water Quality Management Plans

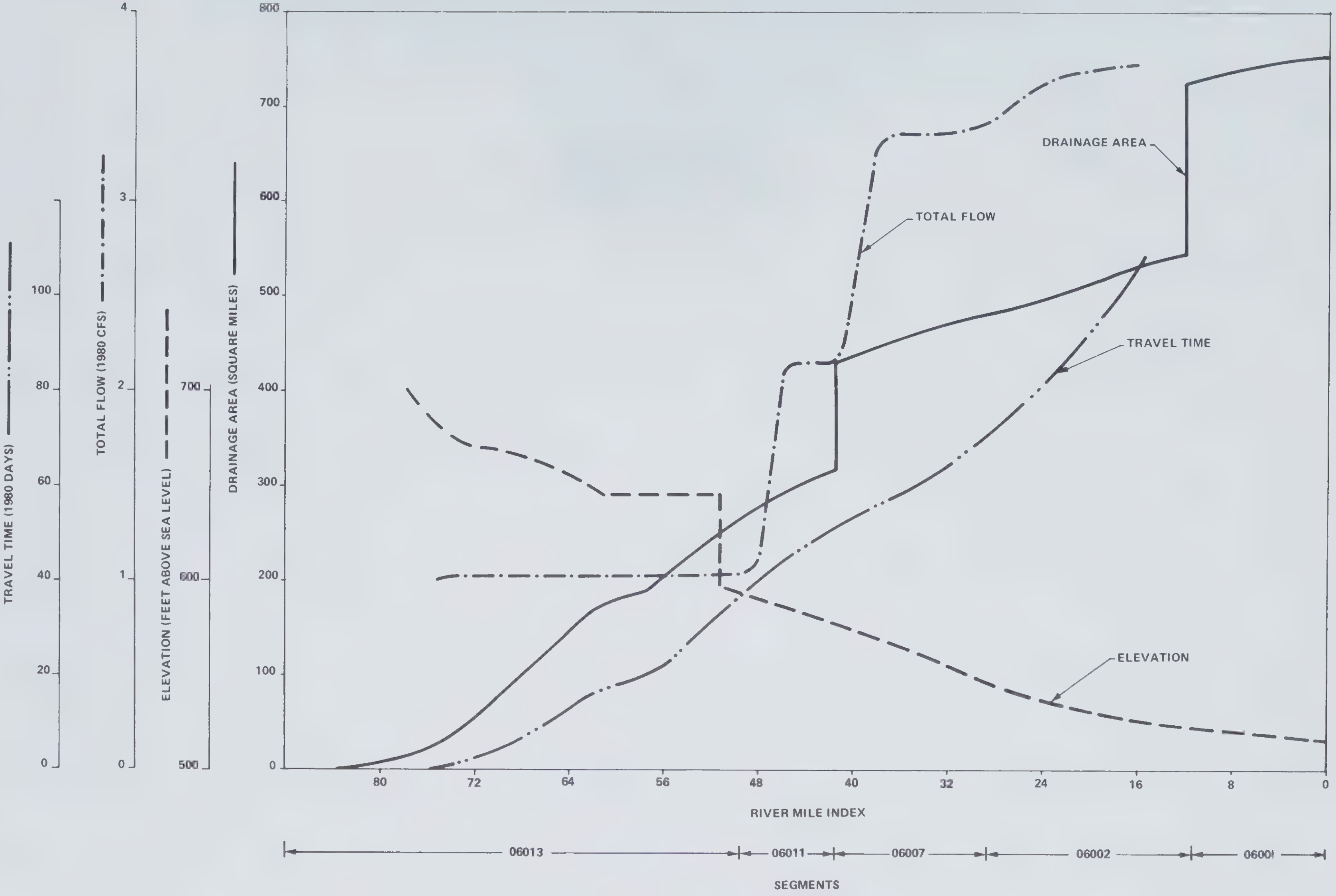

EXHIBIT B-14.1m — RIVER BASIN GRAPHS LITTLE SANDY RIVER

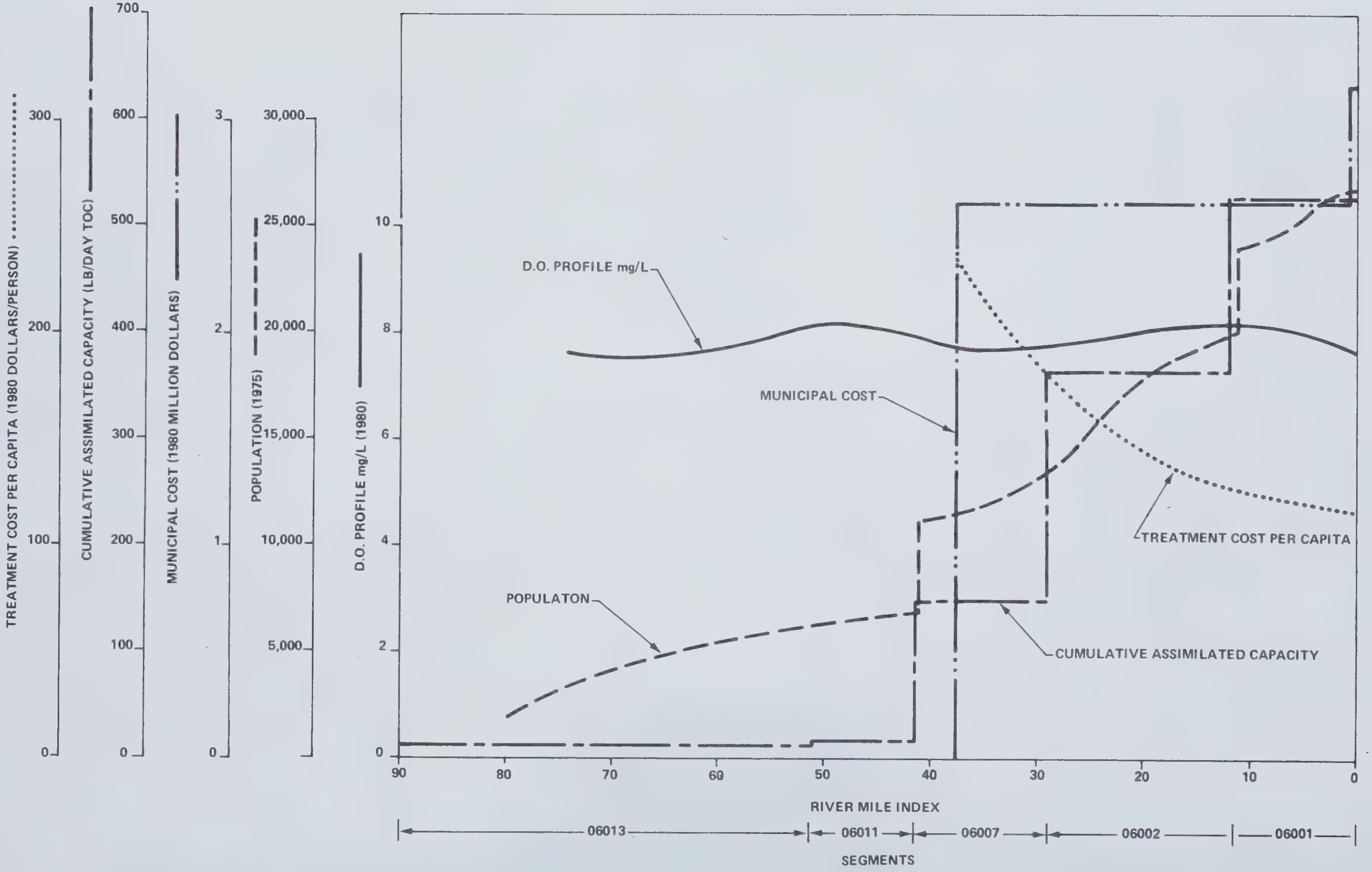

EXHIBIT B-15.1m – RIVER BASIN GRAPHS LITTLE SANDY RIVER

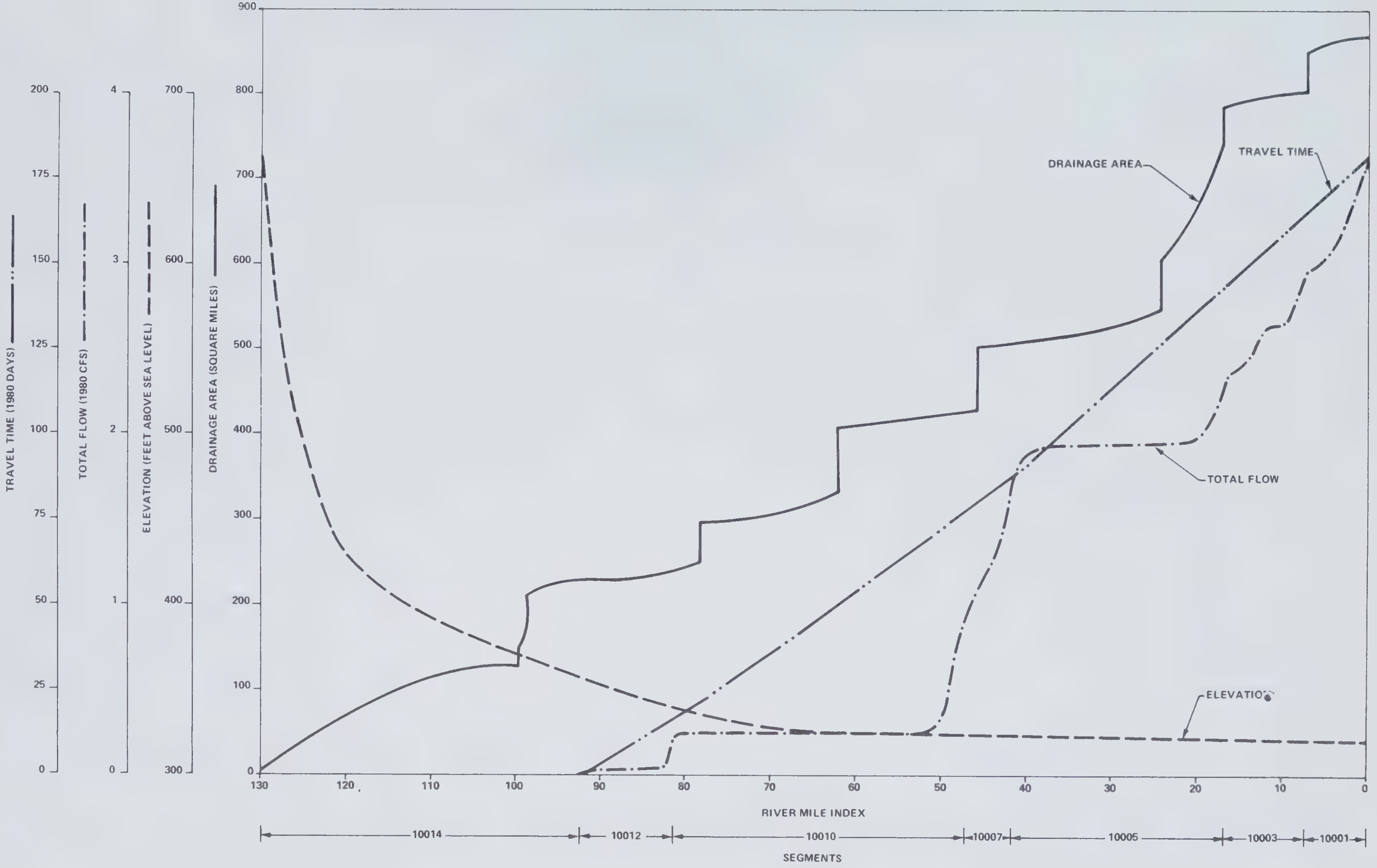

EXHIBIT B-16.1m — RIVER BASIN GRAPHS TRADEWATER RIVER

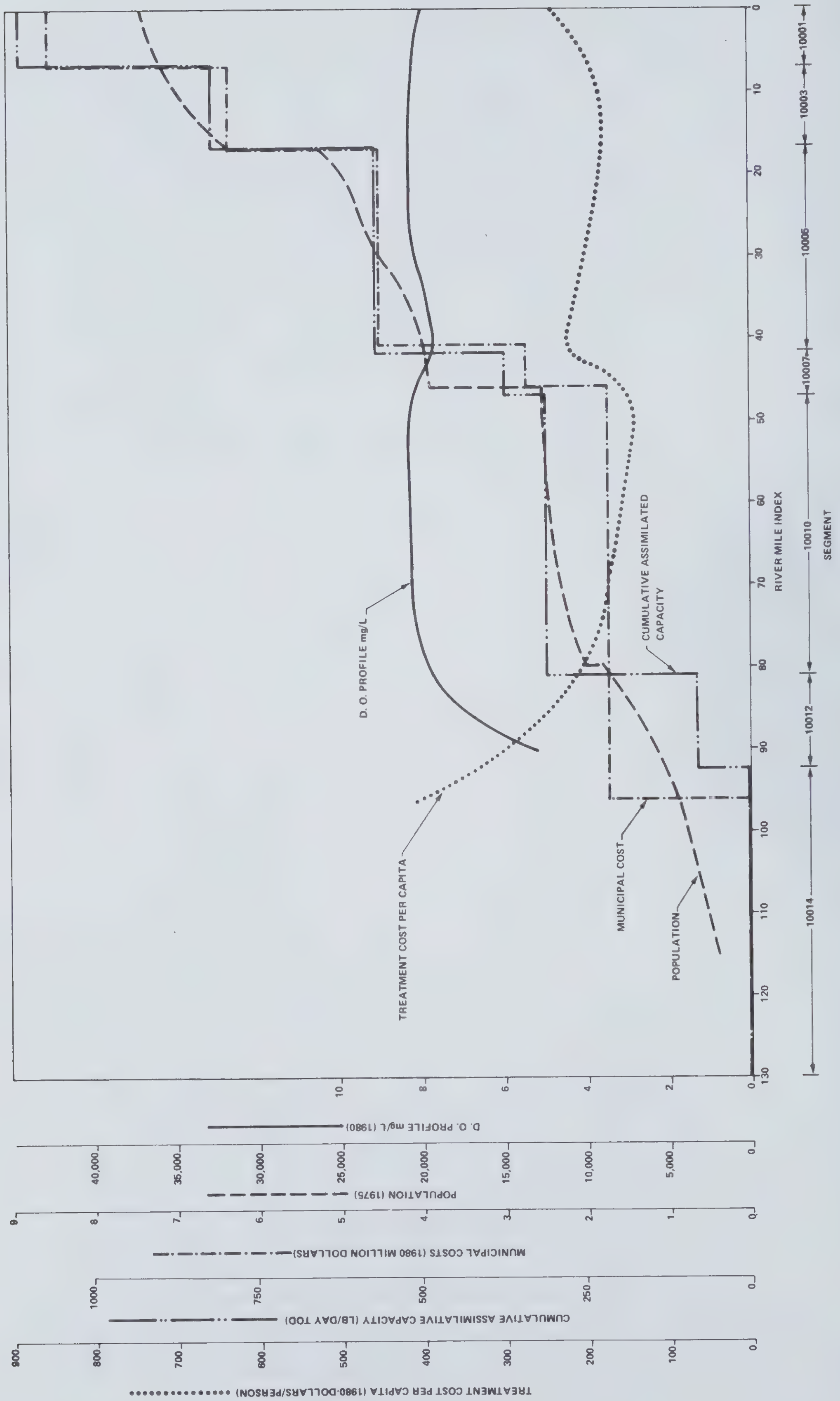

EXHIBIT B-17.1m — RIVER BASIN GRAPHS TRADEWATER RIVER

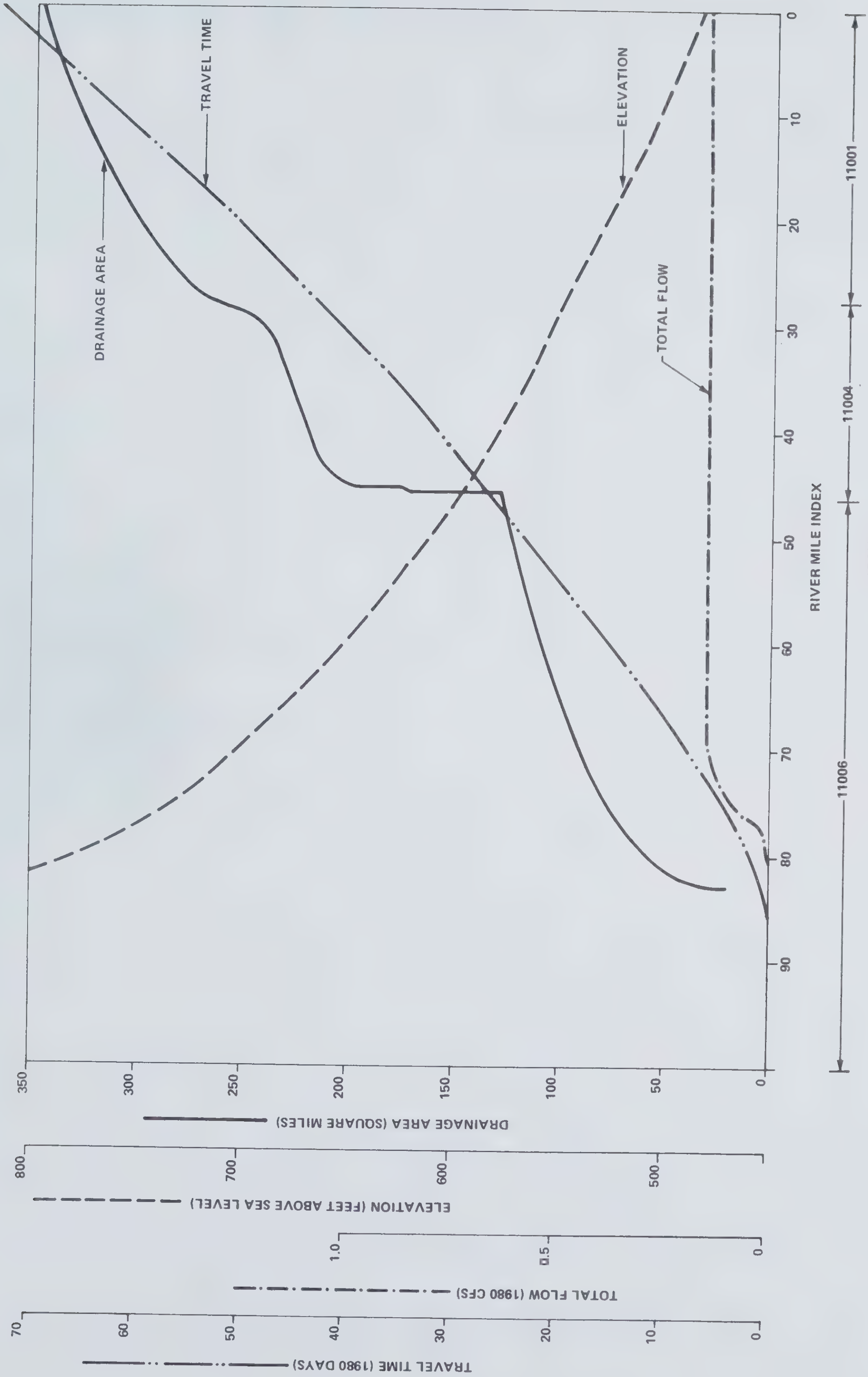

EXHIBIT B-18.1m — RIVER BASIN GRAPHS TYGARTS CREEK

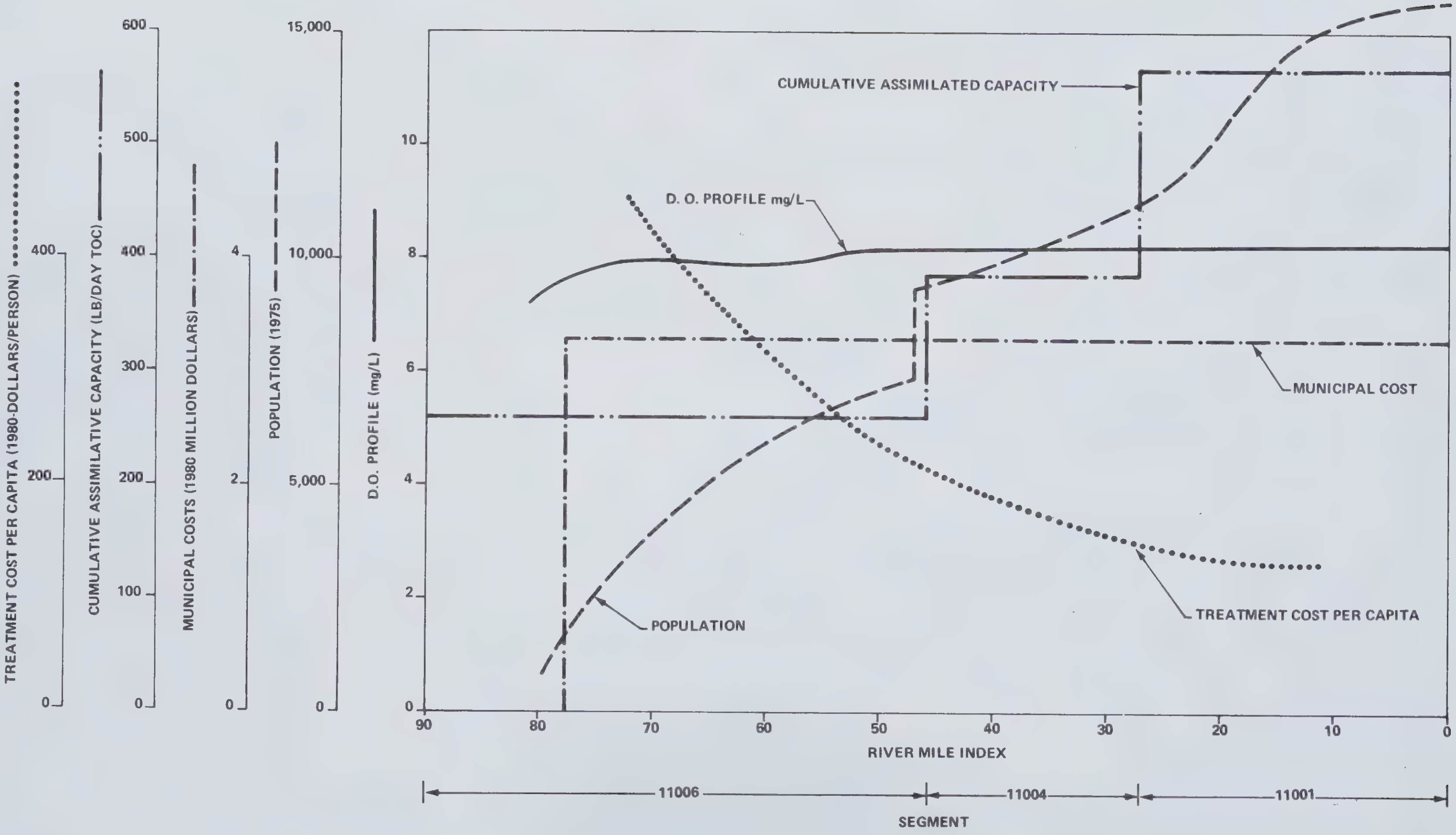

EXHIBIT B-19.1m — RIVER BASIN GRAPHS TYGARTS CREEK

DEFINITION OF TERMS

INTRODUCTION

Appendix D sets forth the definition of terms that are used frequently throughout the report, some of which apply specifically to 303e River Basin Water Quality Planning. Following the definitions is a list of abbreviations which pertain primarily to Exhibit 4.11t and Exhibit 5.2t.

DEFINITION OF TERMS

1. The Act: Section 303(e) of the Federal Water Pollution Control Act, as amended; Public Law 92-500, 1972.

2. Compliance Schedule: The target dates established when it is expected that specific remedial actions will have been taken to meet prescribed water quality standards.

3. Municipal Construction Grant Priorities: A municipal ranking system for all municipal discharges in the river basin. The higher ranking municipalities would be first to receive construction grant funds.

4. Municipal Needs: The total funding required for the construction of the publicly owned treatment facilities and related projects required to meet water quality standards.

5. NPDES Permit System: The National Pollutant Discharge Elimination System means the national permitting system for all significant discharges authorized under Section 402 of the Act.

6. Segment Classification: The determination of water quality limited and effluent limited segments pursuant to their definitions contained in the Act.

7. Segment: A geographical planning subdivision in the river basin with common characteristics.

8. Segment Priority: A numerical ranking system for all the segments in the river basin. The higher the segment priority the higher the level of planning required.

9. Significant Discharge: Any discharge, either point or nonpoint source, for which timely management action must be taken in order to meet water quality objectives.

10. Total Maximum Daily Load: The daily load discharged by all sources into a segment which will not cause water quality violations.

11. Waste Load Allocation: That portion of the total maximum daily load which may be discharged in a segment by an individual source.

12. Wastewater: Wastewater is defined as a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and storm water that may be present. In recent years, wastewater has been used more commonly than the older term sewage.

13. Wastewater Collection: Wastewater collection involves the removal and conveyance of wastewaters through underground conduits called sewers. Where the sewer carry only the household and industrial wastes, they are called sanitary sewers. Those only carrying storm water from the roof and street surfaces are known as storm sewers, while those carrying both household and industrial waste and storm water are called combined sewers.

14. Wastewater Treatment: Wastewater treatment involves the removal of contaminants and may be accomplished by unit operations or processes or combinations of operations and processes.

15. Wastewater Disposal: Wastewater disposal involves the ultimate disposal of the liquid portion of the wastewater and of the solids and other materials removed during treatment.

16. Water Quality Standards: The criteria (i.e., temperature, dissolved oxygen) for evaluating water quality for a particular water use.

LIST OF ABBREVIATIONS

Add. - Additional
Aer. - Aeration
Al. - Aluminum
Alt. - Alternate
Amm. - Ammonia
Appl. - Application
AS - Activated Sludge
Bio-Chem. - Biological-chemical
BOD_5 - 5-Day Biochemical Oxygen Demand
$BPCL_2$ - Breakpoint Chlorination
C - Collectors
CCl_4 - Carbon tetrachloride
CS - Combined Sewers
Cap. - Capacity
Chem. - Chemical
Cl. - Chloride
Cnvt. - Convert
Coag. - Coagulation
COD - Chemical Oxygen Demand
Cont. - Continuous
Conv. - Conventional
Cr. - Chromium
C.S. - Contact Stabilization
C.S.A. - Contact Stabilization Activated Sludge
Cu. - Copper

LIST OF ABBREVIATIONS (continued)

Dechl. - Dechlorination
Denit. - Denitrification
Des. - Design
Dis. - Discharge
D.O. - Dissolved Oxygen
D.S. - Dissolved Solids
E.A. - Extended Aeration
Ext. - Extended
Fac. - Facultative
Facul. - Facultative
Fe - Iron
Filt. - Filtration
Fix. - Fixed
Float. - Flotation
Gth. - Growth
Hold. - Holding
I. - Interceptors
I/I - Infiltration/Inflow
Inf. - Infiltration
Intm. - Intermittent
Irg. - Irrigation
Lag. - Lagoon
L.R.S. - Low Rate Stabilization
MGD - Million Gallons per Day
MPN/100 ml - Most Probable Number/100 ml
MTDL - Maximum Theoretical Daily Load.
Nit. - Nitrification
N.A. - Not Applicable
O.F. - Overland Flow
O&M - Operation and Maintenance
Pb. - Lead
PCB - Poly Chlorinated Biphenyls
Pd. - Pond
Pnd. - Pond
Per. - Percolation
P.N.A. - Process Not Applicable
Poly. - Polymer
Prep. - Precipitation
Prim. - Primary
RBC - Rotating Biological Contactors
Reac. - Reactor
Ref. - Reference
Rem. - Removal
Rgh. - Roughing
Seas. - Seasonal
Sec. - Secondary
Sed. - Sedimentation
SS - Suspended Solids
Stab. - Stabilization
Stg. - Stage
Str. - Stripping
Surf. - Surface
Susp. - Suspended
T.F. - Trickling Filter
T - Treatment
TMDL - Total Maximum Daily Load
TOD - Total Oxygen Demand
Zn - Zinc

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OHIO RIVER MAIN STEM

INTRODUCTION

As a part of statewide water quality basin plan preparation, required under section 303(e) of the Federal Water Pollution Control Act Amendments of 1972 and 40 CFR Parts 130-131, the State of Kentucky has engaged Metcalf & Eddy Engineers to prepare a water quality basin plan for the Ohio River Basin in Kentucky including the Little Sandy River, the Tradewater River and Tygarts Creek. The basin plan requires that all point and nonpoint waste sources in the basin be identified and the effects of these waste sources on the receiving waters in the basin be evaluated. The plan further calls for the identification of all receiving stream segments in which water quality standards are violated, identification of the point and nonpoint sources that contribute to the violation, and recommendations for future treatment levels and compliance goals so as to be able to meet the water quality standards.

During the preparation of the basin plan it was recognized that the Ohio River is an interstate waterway and, therefore, receives waste loads from other states besides Kentucky. To evaluate the water quality in the Ohio River it is, therefore, necessary to take into consideration the waste load discharges from the other states. Upon recognition of this fact Division of Water (Quality), Kentucky Department of Natural Resources and Environmental Protection, the Universities of Kentucky and Louisville and Metcalf & Eddy, decided to work with the Ohio River Valley Water Sanitation Commission (ORSANCO) in trying to evaluate the water quality in the Ohio River and thereby incorporate the unique experience and expertise of ORSANCO and the data it has gathered over the years. It was also decided to use the program "STREAM" developed by ORSANCO for modeling the Ohio River with some modifications to the program and to input data where Metcalf & Eddy felt it had better information available. The overall objective in fulfilling the requirements of the water quality basin plan is to incorporate ORSANCO's experience with Metcalf & Eddy's expertise, rather than trying to duplicate the efforts in modeling. With this objective in mind, point source waste load data from all the states bordering the Ohio River except Kentucky, with secondary and/or best practicable treatment, were used to evaluate the Ohio River water quality. Data for the waste loads originating from Kentucky were collected by Metcalf & Eddy by going through the files of Kentucky Department of Natural Resources and Environmental Protection and the NPDES permits for the discharges. In some cases the effluent waste load for the point sources were estimated by Metcalf & Eddy based on the level and type of treatment. Coordination of the Ohio River water quality modeling was done through meetings and by discussions over the phone between Metcalf & Eddy personnel and the ORSANCO staff. The actual modeling of the Ohio River water quality was done by the ORSANCO staff with values for water quality parameters selected by Metcalf & Eddy. Selection of the waste load data and other water quality parameters are individually discussed. Results of the water quality modeling and conclusions derived from them are separately presented. Management plan for segments on the Ohio River in Kentucky and waste load allocations for the individual discharges are also presented in this appendix.

POINT SOURCE WASTE LOADS

Carbonaceous oxygen demand (BOD_5) and nitrogenous oxygen demand (NOD) data for all the significant point sources, including municipal and industrial, discharging into the Ohio River from the confluence with the Big Sandy River to the confluence with the Mississippi River are presented in Exhibit F-1t. The data presented in Exhibit F-1t represent Ohio River Valley Water Sanitation Commission's (ORSANCO) estimated 1977 waste loads using secondary and/or best practicable treatment for all waste loads except those originating from the State of Kentucky. For the point sources that originate from Kentucky, the waste loads are estimated by going through the files and NPDES (National Pollution Discharge Elimination System) permits for each individual discharge kept at the Division of Water (Quality), Department for Natural Resources and Environmental Protection. This meant evaluating each plant or discharge in terms of the existing treatment process and effluent characteristics, planned or required future treatment levels or processes, and future waste load allocation if applicable. The waste loads for the Ohio River tributaries from Kentucky listed in Exhibit F-1t are obtained from the water quality modeling results of University of Kentucky and University of Louisville (UK/UL) done for each tributary for estimated 1980 waste loads. Exhibit F-1t also lists the mile point at which each waste load enters the Ohio River, the river discharge at that mile point under 7-day 10-year low flow condition. In case of some of the smaller point source discharges, ORSANCO has added waste loads from two or more small discharges and introduced it as a single point source into the Ohio River.

NON-POINT SOURCE WASTE LOADS

The background concentrations assumed for BOD_5 (2.2 mg/l) and NH_3-N (0.35 mg/l) in the Ohio River at mile 316.9 for computer modeling takes into consideration the contributions from all upstream non-point sources. Additional non-point source effects such as combined sewage overflows, and urban runoff were taken into consideration qualitatively in classifying the river segments. However, no effort has been made to quantitatively incorporate combined sewage overflows and urban runoff waste loads into the water quality modeling of the Ohio River. It should be recognized that the effect of combined sewage overflows and urban runoff during the low flow period would be a minimum. However, there still would be oxygen demand from benthal deposits from combined sewage overflows during the low flow period.

EXHIBIT F-1t ESTIMATED 1980 WASTE LOADS DISCHARGING DIRECTLY INTO OHIO RIVER

River Mile from Pittsburg	7-day 10-year Critical Flow, cfs	Discharge Source	1980 Waste Loads lbs./day	
			Carbonaceous Oxygen Demand BOD5	Nitrogenous Oxygen Demand NOD
317.0	9,900	Big Sandy River	2,076	6,831
317.1*	"	South Point	200	320
319.0	"	Allied Chemical	1,000	3,500
322.6	"	Ashland	951	8,407
324.2	"	Allied Chemical	1,000	13,000
324.6	"	Armco Steel	100	900
327.2	"	Ironton	500	800
328.3*	"	Flatwoods	250	400
332.0*	"	USS Chemical	500	500
349.0	"	Sciotoville STP	500	800
351.1	"	Detroit Steel	100	200
351.8*	"	New Boston	350	560
356.0	"	Portsmouth	850	1,360
356.5	"	Scioto River	1,500	4,500
380.0*	"	Aberdeen	100	160
411.8	"	Maysville	243	273
450.0	12,100	New Richmond	100	160
459.5	"	C&O/B&O Railroad	23	0
463.5	"	Little Miami River	500	1,500
465.1	"	Little Miami STP	4,700	9,400
470.3	"	Licking River	500	2,774
472.4	"	Mill Creek River	200	300
472.6	"	Mill Creek STP	28,000	33,600
478.0	"	Campbell-Kenton STP	6,405	5,630
481.2	"	Muddy Creek STP	540	756
484.2	"	Monsanto	1,650	1,980
486.5*	"	Cleves	150	300
489.9	"	Kaiser A. Chem.	20	80

* Two or more discharges

EXHIBIT F-1t (Continued) ESTIMATED 1980 WASTE LOADS DISCHARGING DIRECTLY INTO OHIO RIVER

River Mile from Pittsburg	7-day 10-year Critical Flow, cfs	Discharge Source	1980 Waste Loads lbs./day Carbonaceous Oxygen Demand BOD_5	 Nitrogenous Oxygen Demand NOD
491.1	12,100	Great Miami River	1,000	2,400
493.2*	"	So. Dearborn Dist.	700	1,680
506.0	"	Rising Sun	60	392
541.0	"	Dow Corning	825	5
543.5	"	M & T Chemical	800	160
545.8	"	Kentucky River	301	1,609
558.8	"	Madison	450	900
590.5	"	Charleston	100	300
592.8	"	Ind. Army Depot	100	250
595.9	"	Hite Island STP	133	6
597.6	"	Oak Park Cons.	60	210
605.1	14,300	Clarksville 1	300	480
605.2	"	Jeffersonville	600	960
605.5	"	Colgate	1,160	383
606.4	"	Clarksville 2	200	320
609.4	"	New Albany	1,100	2,200
612.0	"	Louisville MSD	27,908	28,931
613.6	"	American Synthetic	340	360
615.0	"	Stauffer 2	230	0
615.4	"	Shively	240	468
629.9	"	Salt River	144	509
631.4	"	Westpoint	55	17
643.5	"	Olin	2,000	0
645.8	"	Brandenburg	25	34
711.8	"	Cloverport	39	30
719.0	"	Western Kraft	3,850	0
721.7	"	Wescor	2,210	0
724.3	"	Hawesville	28	32

*Two or more discharges

EXHIBIT F-1t (Continued) ESTIMATED 1980 WASTE LOADS DISCHARGING DIRECTLY INTO OHIO RIVER

River Mile from Pittsburg	7-day 10-year Critical Flow, cfs	Discharge Source	1980 Waste Loads lbs./day Carbonaceous Oxygen Demand BOD_5	Nitrogenous Oxygen Demand NOD
728.0	14,300	Tell City	1,860	1,115
738.4	"	Lewisport	24	18
751.3	"	W.R. Grace	255	0
757.6*	"	Glenmore Dist.	236	0
758.5	"	Owensboro	1,952	2,196
773.5	"	Alcoa	470	330
792.0	"	Evansville, East	2,235	4,980
793.8	"	Evansville, West	2,330	4,660
806.0	"	Henderson	751	676
807.2	"	Willchem	50	760
829.3	"	Farm Bureau Ref.	50	1,240
829.8	"	Mt. Vernon	225	360
842.3	"	Uniontown	47	12
848.0	20,000	Wabash River	10,000	22,500
920.4	48,500	Cumberland River	11,495	13,215
934.5	"	Tennessee River	36,786	41,381
935.0	"	Paducah	876	788
944.0	"	Metropolis	230	368
979.0	"	Cairo	340	544

*Two or more discharges

CRITICAL LOW FLOWS

In order to simulate the water quality condition in the Ohio River with secondary and/or best practicable treatment to all wastes, critical low flows of 7-day duration and 10-year frequency have been used. The 7-day 10-year low flow for each of the Ohio River pools was earlier estimated by the U.S. Army Corps of Engineers and includes future operations and flow controls from existing dams and from projects to be completed by late 1970's. The estimated critical low flows in the pools of the Ohio River from the Big Sandy River to the Mississippi River are presented here.

Ohio River Pool Created By	From Mile	To Mile	7-day 10-year critical low flow cfs.
Greenup Dam	317.0	341.0	9,900
Meldhal Dam	341.0	436.2	9,900
Markland Dam	436.2	531.5	12,100
McAlpine Dam	531.5	605.8	12,100
Cannelton Dam	605.8	720.7	14,300
Newburgh Dam	720.7	776.1	14,300
Uniontown Dam	776.1	846.0	14,300
Smithland Dam	846.0	918.5	20,000
Mound City Dam	918.5	975±	48,000
Below Mound City Dam	975±	981.0	48,000

Smithland Dam is now (1975) under construction and Mound City Dam is under preconstruction planning.

DEOXYGENATION RATES

Deoxygenation rates for organic matter present in effluents from wastewater treatment plants may vary over a wide range depending on the waste and the type of treatment it received. In general, the magnitude of the deoxygenation rates decreases with increased stabilization of the effluent. Decay rates for carbonaceous and nitrogenous organic matters with secondary and/or best practicable treatment are briefly described here.

Carbonaceous Decay Rate-K_{1C}

All municipal and industrial wastewaters are required to have a minimum of secondary and/or best practicable treatment by 1977 before these wastewaters could be discharged into the Ohio River. Past experience has shown that secondary treatment, in most cases with activated sludge, removes a majority of the easily degradable organic matter, leaving the more resistant materials with lower decay coefficients. For plant effluents alone, subjected to secondary treatment with removals of 90 percent or more, carbonaceous decay rate (K_{1C}) values of less than 0.05 (base 10 at 20°C) can justifiably be used. Schroepfer, et al have reported K_{1C} values less than 0.05 in their study of the Mississippi River. For the purpose of this study, a value of 0.06 (base 10 at 20°C) is used for the carbonaceous decay rate K_{1C} based on the assumption that all municipal and industrial plants will have secondary and/or best practicable treatment by 1977. Exhibit F-2t lists the value for the carbonaceous decay rate, K_{1C}.

Nitrogenous Decay Rate-K_{1N}

Under present day conditions, wastewater effluents from municipal treatment plants are disinfected, normally with chlorine or hypochlorite. Chlorination of nitrifying effluents is a highly effective way of controlling nitrification in the receiving streams. Effluents not carrying their own seed of nitrifying organisms are subject solely to the natural seed occuring in the river water or in attached growths on the bottom and submerged objects. The population of organisms normally carried in the river water is extremely small. In deep rivers and impoundments, nitrifying organisms in attached growths play a very minor role in the nitrification reaction because of the large volume to bottom area relationships.

All effluents from municipal wastewater plants that will be discharged into the Ohio River in 1977 can be expected to be disinfected. The Ohio River is a large river with depths in the pools ranging from a minimum of 9 feet to a maximum of over 40 feet during the low flow period. One additional factor is that ammonia is a prime nutrient for most green and blue-green algae. With required chlorination of effluents, these algae will make great inroads upon the ammonia supply and thereby reducing the amount of ammonia available for oxidation by nitrifying bacteria. Because of these above factors, the rate of nitrification in the Ohio River is expected to be a minimum. For the Ohio River a value of 0.05 (base 10 @ 20°C) for nitrogenous decay rate, K_{1N} is used, as shown on Exhibit F-2t.

Temperature Correction

The values for carbonaceous and nitrogenous decay reates selected in the previous two sections are for base 10 at 20°C. Temperature of the Ohio River water during the summer months is higher than 20°C, requiring temperature correction to these values. The following two relations are used for temperature correction to the carbonaceous and the nitrogenous decay rates respectively.

$$K_{1C} \text{ (at temp. } T > 20^\circ C)$$
$$= K_{1C} \text{ (at temp. } T = 20^\circ C) \ \theta_C^{(T-20)}$$
$$= 0.06(1.047)^{T-20}$$

$$K_{1N} \text{ (at temp. } T > 20^\circ C)$$
$$= K_{1N} \text{ (at temp. } T = 20^\circ C) \ \theta_N^{(T-20)}$$
$$= 0.05(1.0524)^{T-20}$$

Values for temperature correction factors for carbonaceous load, θ_C and for nitrogenous load θ_N are listed in Exhibit F-2t.

REAERATION RATE CONSTANT, (K_2)

General

The addition of dissolved oxygen to natural streams is very important to the quality of water and the capacity of the stream to assimilate pollutional loads. Unless in net beneficial effect it is greater than the adverse effect of decomposition of organic matter, the dissolved oxygen (DO) content would continue to decrease downstream. Fortunately even under heavy stress of pollution loads the DO recovers in most streams after the passage of several days time. Because of its importance, a number of investigations have been carried out over the years to determine the mechanism of oxygen transfer from the atmosphere to the water. The earliest of these were by Streeter and Phelps (A Study of Pollution and Natural Purification of the Ohio River, Public Health Bulletin 146, 1925). Phelps in his textbook "Stream Sanitation" evaluated this work and suggested

EXHIBIT F-2t PARAMETERS FOR WATER QUALITY MODELING IN OHIO RIVER MAIN STEM(1)

Water Quality Parameters	Selected Values
1. Carbonaceous rate:	
Impoundments (K_{1c})	0.06 1/day
2. Nitrogenous rate:	
(K_n)	0.05 1/day
3. Reaeration rate:	
Impoundments (K_2)	Rational Method See Exhibit F-3t
Dams	
$R = \frac{C_s - C_u}{C_s - C_d}$ (2)	= 2.0 for all dams except Markland and McAlpine = 1.05 for Markland and McAlpine
4. θ values (Temperature Correction Factors) for:	
K_{1c}	1.047
K_n	1.0524
K_2	1.017

1. K values are to base 10 @ 20° C.
2. R = deficit ratio @ 20° C, and C_s, C_u and C_d are the saturation, upstream and downstream dissolved oxygen concentrations respectively.

a relation for the reaeration coefficient K_2 (base 10, at 20°C) as follows:

$$K_2=\frac{CV^n}{D^2}$$

Where C is a coefficient varying from 0 to 15, and n varying from 1 to 2 depending on river geometry, V and D are the mean velocity and mean depth.

Velz in his textbook "Applied Stream Sanitation" simplified this relation to:

$$K_2=\frac{5.4V}{D^2}$$

In 1958 O'Connor & Dobbins presented an important contribution on reaeration. In a simplified form, their reaeration rate reduces to:

$$K_2=\frac{5.6V^{0.5}}{D^{3/2}}$$

In 1962, Churchill, et al, presented a simplified relation for reaeration rate:

$$K_2=\frac{5V}{D^{5/3}}$$

An examination of the three equations shows a remarkably close relationship between the coefficient in the numerator but a marked disparity in the exponents of the V and D which are really important as shown below:

Equation	Value of Coefficient	Value of V exponent	Value of D exponent
Streeter, Phelps, Velz	5.4	1.0	2.0
O'Connor & Dobbins	5.6	0.5	1.5
Churchill, et al	5.0	1.0	1.67

The coefficient in the numerator is expected to measure many factors including molecular and turbulent diffusion, major outside influences such as net effective surface area, wind and resultant wave effects, effect of boat passage, and as related to earlier data, higher deoxygenation rates with low degrees of treatment, resultant benthal loads, photosynthetic aeration, etc. Obviously some of these effects were translated to the V and D exponents as indicated by the great variation and their even greater effect on calculated reaeration and on the resultant predicted DO levels of downstream

The methods of calculating reaeration coefficients have generally been based on the employment of theoretical relations and then justifying them by observed results in particular situations. The correlation has not been good partly because the observed results have been deficient, viz. (1) they have been based on inferior data under conditions of primary or zero treatment for which effluent deoxygenation rates were many times those demonstrated for secondary or advanced treatment, (2) the uncertainties of the actual flow times as they affect deoxygenation (and reaeration) which vary by a factor of 2 or more and (3) the question of effective surface areas with a varying cross-section as they affect surface reaeration and the important K_2 rate.

Another method, known as the Rational Method, of determining aeration in a stretch of river involves an oxygen balance calculation between two sections of a river A and B and determining the BOD exerted by the flowing load according to the following relation:

$$R_N=DO_B-DO_A+BOD_{FL}$$

This is a direct calculation, in which R_N is the net reaeration in pounds of DO determined from actual values of DO and BOD. The reaeration rate, r, in pounds of DO added per 1,000 sq. ft. per day is calculated from R_N, calculated above, by dividing with the surface area of the rach. It should be noted that the R_N value measures also the effect of sludge deposits, if any, and photosynthetic reaeration. This method requires the availability of sufficient sampling data at relatively close points in a river at a constant temperature.

The effect of sludge deposits on the value of r is shown by data collected in the Hastings Pool on the Mississippi River near St. Paul. In 1960, with only primary treatment the average r value was approximately 2.5 lb/1,000 sq. ft./day By 1970 after several years of operation of modified aeration activated sludge treatment plant the reaeration rate r had increased to slightly more than 3.5.

The r value is directly related to the reaeration rate constant K_2 as:

$$r=12.42\frac{Qt}{A}\ SK_2$$

Where A is water surface area in 1,000 sq. ft., Q is discharge in cfs., t is time of travel in days, S is DO saturation value in mg/L and K_2 is reaeration rate constant.

Comparisons of Reaeration Rates for Cannelton Pool

Calculations have been made, for illustrative purposes of reaeration in the Cannelton pool in the Ohio River which extends from the McAlpine Dam at mile 608 to the Cannelton Dam at mile 720 and are presented below:

Conditions	At Mile 608	At Mile 720	Average
Mean depth, ft.	8.5	43.4	-
Velocity, fps.	0.71	0.13	-
Channel width, ft.	710	2,600	1,360
Critical Discharge, cfs	14,300	14,300	14,300
Theoretical Time of Travel, days*	-	-	16.3
Denominator, $D^{5/3}$ in Churchill's equation	35.5	535	
Reaeration rate, K_2 (base 10@ 20°C) using Churchill's equation	0.10	0.001	

Conditions	At Mile 608	At Mile 720	Average
Denominator $D^{3/2}$ in O'Connor's Equation	25	286	
Reaeration rate, K_2 (Base 10 @ 20° C) using O'Connor's equation	0.19	0.007	
Reaeration Rate, K_2 (Base 10 @ 20° C) using Rational Method with r=3.0 lb/1,000 sq. ft./day	0.08	0.054	

*Assuming a hydraulic efficiency of 100 percent

At mile 608, the reaeration rate calculated by Churchill's method is of the same order as calculated by the Rational method and that calculated by the O'Connor's method is more than twice as much. At mile 720, the reaeration rate calculated by the Rational method is almost 7 times that calculated by the O'Connor's method and over 50 times as large as that calculated by the Churchill method.

Serious discrepancy exists between the reaeration rates calculated by using Churchill's and O'Connor's methods and those calculated by the Rational method. This is particularly true in the deeper pools. The values in the deeper pools are much smaller than those presented in O'Connor's original paper. Also consideration needs to be given to surface area as a parameter in the basic mechanism of oxygen transfer to the river. It has therefore been decided to use the Rational method with r values of 2.5, 3.0, and 3.5 lbs/1,000 sq. ft./day in addition to the O'Connors method to evaluate the oxygen resources in the river. Exhibit F-3t presented the reaeration rate constants calcaulated using the Rational method for the Ohio River pools.

Temperature Correction

For temperature correction to reaeration rate K_2 at temperature, other than 20 degrees C the following relation is used:

$$K_2 \text{ (at temp. } T > 20^{\circ}\text{C)} = K_2 \text{ at } 20^{\circ}\text{C) } 1.017^{(T-20)}$$

AERATION AT DAMS

Although the construction of dams markedly increases deoxygenation by increasing flow times (time of passage) through a pool, this adverse effect can be reduced by operation of the dams to maximize aeration. The fall of approximately 460 feet on the Ohio River between Pittsburgh and Cairo provides an opportunity to take advantage of this fotunate situation at the present and future dams along this stretch. As an illustration the addition of 1 mg/L under the critical flow conditions of 14,300 cfs at Cannelton would result in the daily increase of 77,000 pounds of oxygen resources per day. The alternative of meeting this by increased treatment would be very expensive. In addition, this increase in oxygen level of the river would improve the quality at times other than at the critical low flows. The opportunity of taking advantage of this situation on the Ohio River applies both to dams used primarily for navigation as well as those (Markland and McAlpine) which incorporate hydro-electric power generation.

The Ohio River Valley Water Sanitation Commission (ORSANCO) in its April 4, 1974 report on "Model Studies to Estimate Future Dissolved Oxygen Concentrations in the Ohio River" considered the level of oxygen additions at the Ohio River dams.

The report employs the accepted method stated in the following relation:

$$r = \frac{Cs-Cu}{Cs-Cd}$$

where:

r = deficit ratio at 20 degrees C

Cs = saturation DO concentration

Cu = upstream DO concentration

Cd = downstream DO concentration

The deficit ratio at other temperatures can be calculated by taking into consideration the temperature effect on solubility of oxygen.

Unfortunately data to quantify the above relationship are available only for the three dams at Emsworth, Dashields, and Montgomery Island. Data for these three dams are compared with data for the Hastings Dam on the Mississippi River here:

Dam	Difference in pool levels, ft.	Deficit ratio r at 20 deg. C	DO added through dam % of saturation at 20 degrees C with zero saturation above Dam
Emsworth	18.0	2.3	56
Dashields	10.0	3.8	74
Montgomery Is.	17.5	2.0	50
Average for three dams	15.2	2.7	63
Hastings Dam (1930-1938)	18.5	2.13	53
Hastings Dam (1963-1965)	12.0	1.72	42

Oxygen pick up at the Hastings Dam dropped in 1939 after the Red Wing Dam was built on the Mississippi River and the subsequent reduction of the difference in pool levels. Spillways were submerged and thereby aeration was markedly reduced. In 1963 bulkheads were installed at the Hastings Dam to increase oxygen pickup by overflow discharge (instead of underflow discharge through the Tainter

EXHIBIT F-3t REAERATION RATES (K_2) IN OHIO RIVER POOLS

Ohio River Pool	From Mile Point	To Mile Point	K_2 Values (1/day)		
			r = 2.5(1)	r = 3.0	r = 3.5
(1)	(2)	(3)	(4)	(5)	(6)
Greenup	317	341	.061	.074	.086
Meldahl	341	368	.152	.182	.212
	368	387.5	.085	.102	.119
	387.5	436.2	.063	.075	.088
Markland	436.2	463.5	.128	.153	.179
	463.5	491	.066	.079	.092
	491	531.5	.051	.061	.071
McAlpine	531.5	560	.140	.168	.196
	560	605.8	.084	.101	.117
Cannelton	605.8	615	.168	.202	.236
	615	646	.103	.123	.144
	646	720.7	.060	.071	.083
Newburgh	720.7	776.1	.108	.130	.151
Uniontown	776.1	803	.104	.125	.145
	803	846	.067	.080	.093
Smithland	846	918.5	.130	.156	.182
Mound City (Proposed)	918.5	975	.128	.154	.179
	975	981	.166	.199	.232

1. Units of r = lbs./1000 sq.ft./day

gates) and as a result there was a significant improvement in dam aeration. As shown in Exhibit F-4m there is satisfactory agreement between the measured values at the Hastings Dam and those at the upriver Ohio Dams particularly if the atypical r value of 3.8 at the Dashields Dam is partially discounted. The values then would be close to the observed values on Curve 5 of Exhibit F-4m for the Hastings Dam.

The problem for discussion is the unusually low value assumed in the model studies for all of the remaining dams. The value of r = 1.50 (Curve 2) assumed for all of these (except the McAlpine and Markland hydropower dams where a value of 1.05 was used) is very conservative. At the 5 mg/L standard (55 percent saturation at 20 degrees C), the difference between Curve 5 and Curve 2, represents .8 mg/L in the aeration at the various dams.

Consideration should also be given to the effective heads at the dams. The three upriver dams on the Ohio have an average effective head of 15.2 feet which is approximately the average head of 12.0 and 18.5 for the Hastings Dam on the Mississippi. However, the average effective head on the remaining dams for which a ratio r of 1.5 was assumed (Curve 2) was 22.5 feet (16-30 feet) which is 50 percent greater than the 15.2 feet for the Ohio River Dams measured. Since, depending on the geometry of the dams and the mode of operation, energy dissipation and consequent oxygen pick-up is related to effective head, the ratio of 1.5 is low, for this and other reasons previously cited. For this reason the ratio of r = 2.0 for all dams except Markland and McAlpine was selected to be used. Aeration at the McAlpine and Markland Dams was essentially discounted by the assumption of an r value of 1.05 (See Exhibit F-4m - Curve 1). This is a reasonable assumption for waters passing through the hydro-runner, unless air is bled into the intake.

Studies elsewhere indicate that additions can approximate those for overflow or underflow dams. There is a decrease in hydro-efficiency reflected by the degree in the weight of the air-water mixture, partially compensated by the increased pond storage. An economic and ecology balance is involved, but the importance of considering possibilities in this area, because of the strategic locations of these dams, is strongly emphasized. Further, the need for air to be allowed into the turbine is only required during the low flow periods and not on a year-round basis.

HYDRAULIC EFFICIENCY

The hydraulic efficiency of a river pool, defined herein as the ratio of the actual average time of passage divided by the theoretical displacement time, is a very important factor in river performance from a DO standpoint. The Ohio River has a very irregular and changing pattern both horizontally and vertically. A consideration of hydraulic efficiency is necessary to the correct determination of assimilative capacity, before any investigation of allocation can be attempted.

There is no direct way of calculating the hydraulic efficiency of river pools such as on the Ohio River. In the Cannelton pool for example the river depth varies from 8.5 feet to 43.4 feet, proceeding downstream. The width of the channel varies also in an irregular pattern from 710 to 2,600 feet. Along with this the channel makes a number of bends.

Methods used for determining hydraulic efficiency have employed the use of tracers; dyes, radioactive materials, and constituents actually present in the river.

An example of the use of the latter method is contained in the report "Pollution and Recovery Characteristics of the Mississippi River" Volume 1 - Part 3 prepared by the University of Minnesota, dated September 1961. In this report, hydraulic efficiency was determined at minimum flows by the use of the tracer total nitrogen. This is because a major packing plant complex existed upstream in a substantially flat pool 21 miles in length with depth varying from 9 to 18 feet. These studies indicated an efficiency of 50 percent at flows 30 percent higher than the critical flow of 2,000 cfs.

In the calculation of river volumes necessary to the determination of time of passage, it is important in a pool changing in cross-section, that in any future study the prismoidal relation be used rather than average end areas unless cross-sections are determined at very close intervals.

Because of the importance of hydraulic efficiency on deoxygenation and reaeration and on augmentive methods such as effluent diffusion, mechanical aeration at critical points, low flow augmentation, etc. it is considered essential to investigate this factor.

It was, therefore, decided to determine the effect of hydraulic efficiencies of 50 percent, 75 percent and 100 percent on the DO profile of the Ohio River.

WATER QUALITY MODELING

Introduction

In order to determine the future water quality of the Ohio River with secondary and/or best practicable treatment to all municipal and industrial wastewaters, the Ohio River was modeled using the Computer Program "Stream" developed by ORSANCO. Only the stretch of the Ohio River extending from the confluence with the Big Sandy River (mile 317) to the confluence with the Mississippi River (mile 981), was modeled. The water quality modeling was done in two phases. In Phase I computer runs were made to determine the sensitivity of the DO Profile in the river to the various decay rates, the reaeration rates, reaeration at the dams and to the background DO and wasteload concentrations in the Ohio River above the confluence with the Big Sandy River. The results of the Phase I computer runs are summarized here.

In Phase I, two sets of computer runs were made to determine the DO Profile in the Ohio River, one using the O'Connor-Dobbins method and the other using the Rational Method for calculating reaeration in the Ohio River pools. In the Rational Method values of 2.5, 3.0, and 3.5 lb/1,000 sq. ft./day for the reaeration rate r and the corresponding values of K_2, presented in Exhibit F-3t, were used. Waste load data presented in Exhibit F-1t, carbonauous decay rate K_{1C} of 0.06 1/day, and nitrogenous decay rate K_{1N} of 0.05 1/day were used in both sets of computer

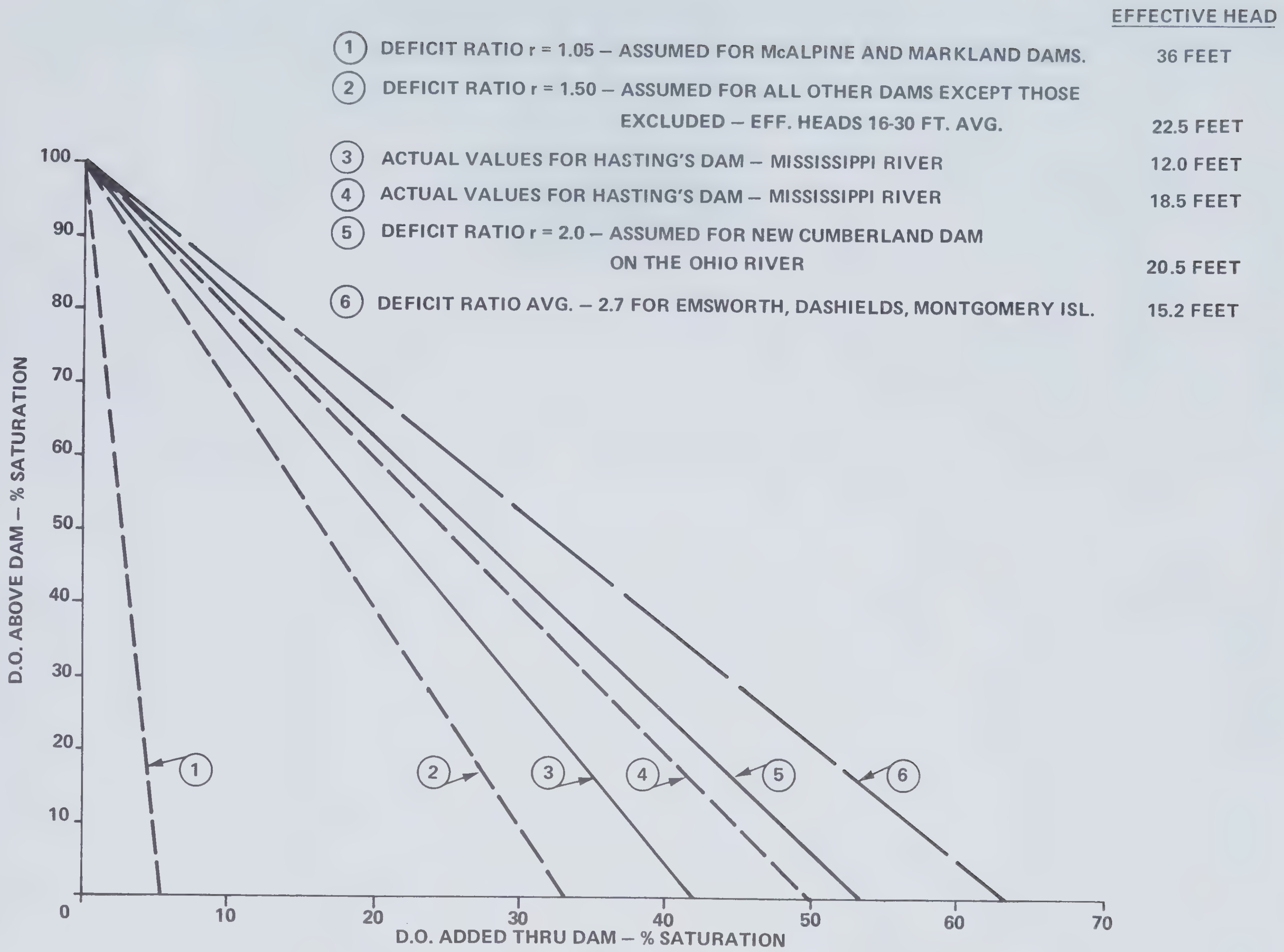

EXHIBIT F-4m – COMPARISON OF ASSUMED VALUES OF AERATION THRU DAMS FOR OHIO RIVER AND OBSERVED VALUES FOR HASTINGS DAM ON MISSISSIPPI RIVER 20° C runs in Phase I. In all, 12 computer runs were made in Phase I with three using the O'Connor's Method and nine using the Rational Method for calculating reaeration. In these computer runs values used for background concentrations for ultimate carbonauous oxygen demand, nitrogenous oxygen demand, and dissolved oxygen in the Ohio River above Big Sandy were respectively 3.52 mg/L, 1.6 mg/L, and 5.50 mg/L. Upon evaluation of the results of the computer runs made in Phase I, two more computer runs were made in Phase II. One of these used the O'Connor's Method and the other used the Rational Method for calculating reaeration. Results of these two computer runs are discussed in detail and are also presented graphically to aid in the evaluation of Ohio River water quality using secondary and/or best practicable treatment to all municipal and industrial discharges.

Results from Phase I Computer Runs

A summary of minimum and second minimum dissolved oxygen levels and mile points at which they occur, as obtained from the results of the twelve computer runs in Phase I are presented here together with the hydraulic efficiency used for each run and the reaeration rate r used in the case of runs using the Rational Method.

ground concentrations for the ultimate carbonauous oxygen demand (3.52 mg/L) and the nitrogenous oxygen demand (1.6 mg/L) used in these computer runs.

The background concentration for the ultimate carbonauous demand of 3.52 mg/L appears to be high, however, there was no data to justify reducing this value. The background concentration for nitrogenous oxygen demand of 1.60 mg/L appears to be correct. The background concentration of 5.50 mg/L for DO (70 percent of saturation at 83°F) appears to be quite low for a river receiving effluents which will be subjected to secondary treatment and/or best practicable treatment. The recorded minimum average daily value for DO in the Ohio River is 5.8 mg/L at Huntington, West Virginia since the ALCOSAN (Allegheny County Sanitary District) plant went into operation with secondary treatment. This value was recorded in September 1974, with most municipal plants receiving primary treatment. Once the upstream river is restored with all plants receiving secondary and/or best practicable treatment a background DO value between 6.3 and 6.7 mg/L (80 to 85 percent of saturation) would be more reasonable. It was, therefore, decided to use a value of 6.5 mg/L for the final computer runs in Phase II to determine the DO Profile.

Comparison of Results using O'Conner's and Rational Method

Method	Hydraulic efficiency (percent)	Reaeration rate, r lb./1000 sq. ft./day	Minimum DO mg/L	At Mile Point	Second minimum DO mg/L	At Mile Point
O'Connor	100	-	2.84	341	5.61	390
O'Connor	75	-	3.27	341	5.31	410
O'Connor	50	-	3.85	341	4.84	436
Rational	100	2.5	4.46	340	6.31	341.1
Rational	75	2.5	4.42	340	6.28	341.1
	50	2.5	4.51	341	6.29	341.1
	100	3.0	4.79	340	6.46	341.1
	75	3.0	4.69	340	6.41	341.1
	50	3.0	4.71	341	6.41	341.1
	100	3.5	4.92	340	6.59	341.1
	75	3.5	4.69	340	6.51	341.1
	50	3.5	4.88	341	6.49	341.1

As shown by the summary tabulation above, there is marked difference between O'Connors Method and the Rational Method at critical points in the DO Profile. The impact of hydraulic effícency appears to be small in the Rational Method but becomes significant in the O'Connor's Method. Maximum DO variations in the Rational Method range between 4.5 and 4.9 mg/L for variations in the reaeration rate r from 2.5 to 3.5 lbs/1,000 sq. ft./day and shows that inincrasing the reaeration rate r by 40 percent increases the DO by only nine percent. At higher DO levels downstream the difference is even smaller. In the O'Connor's Method the minimum DO varies from 2.8 mg/L at 100 percent hydraulic efficiency to 3.9 mg/L at 50 percent hydraulic efficiency. The difference between the two methods ranges from 0.6 to 2.1 mg/L and represents a major increase in the expenditures required to maintain a water quality standard in the Ohio River.

Results of all twelve runs in Phase I showed that the DO level in the Ohio River dropped significantly in the first thirty miles below the Big Sandy River and violated the minimum DO standard of 5 mg/L in each case. The reasons for this are the low background DO levels (5.5 mg/L) and the high background concentrations

Results from Phase II Computer Runs

Upon analysis and evaluation of the results of the 12 computer runs made in Phase I, it was decided to make two final computer runs in Phase II. In one of these, O'Connor's Method for calculating the reaeration was used and the Rational Method for calculating reaeration was used in the other. A hydraulic efficiency of 75 percent was used in both runs as representative of the flow times in the Ohio River. In addition, a reaeration rate r of 2.5 lbs/1,000 sq. ft./day and the corresponding K_2 values from Exhibit F-3t were used in the Rational Method.

Exhibit F-5m shows the 7-day 10-year low flow in the Ohio River stretch under consideration, and the corresponding velocities are presented in Exhibit F-6m. Time of travel in the Ohio River for 75 percent hydraulic efficiency is presented in Exhibit F-7m. The starting time of travel in Ohio River at mile 316.9 was arbitrarily assumed to be 1.50 days as this was the most convenient solution for the program "STREAM." Reaeration rate coefficients (K_2) in the Ohio River using the O'Connor's and Rational Methods are presented respectively in Exhibits F-8m, and F-9m. Profiles of ultimate car-

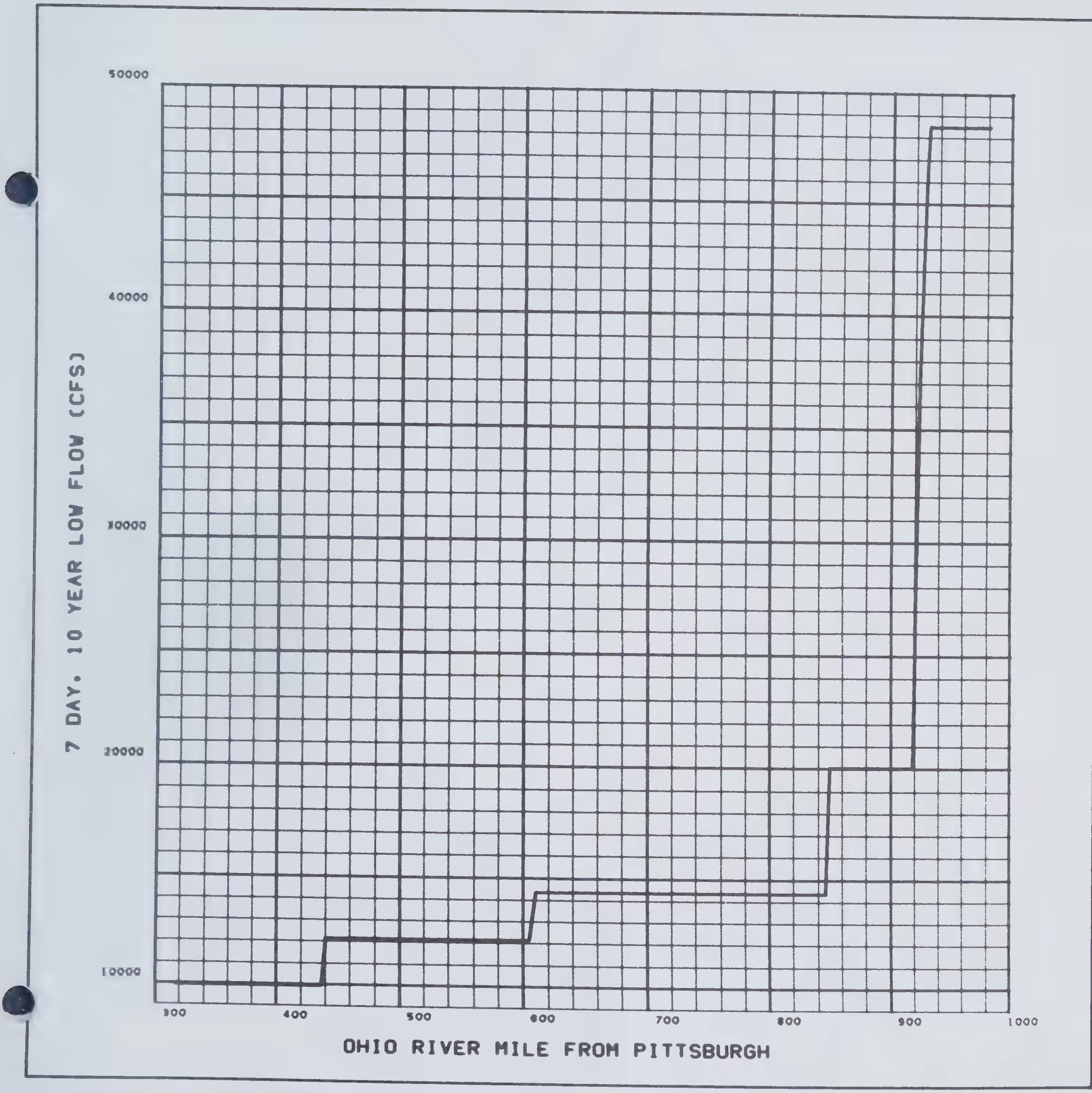

EXHIBIT F-5m — 7 DAY 10 YEAR LOW FLOW IN OHIO RIVER

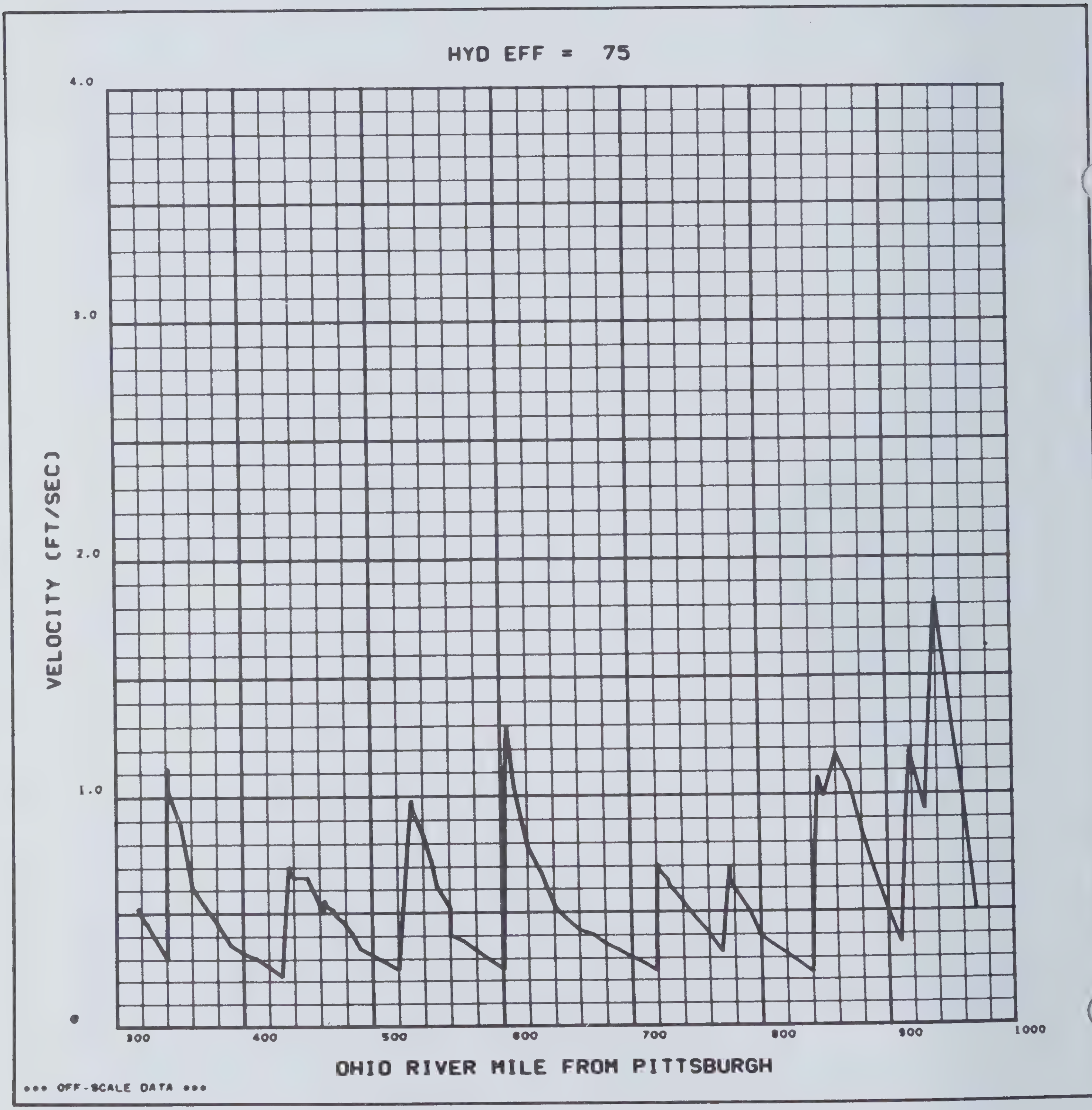

EXHIBIT F-6m – MEAN VELOCITY IN OHIO RIVER WITH 75 PERCENT HYDRAULIC EFFICIENCY

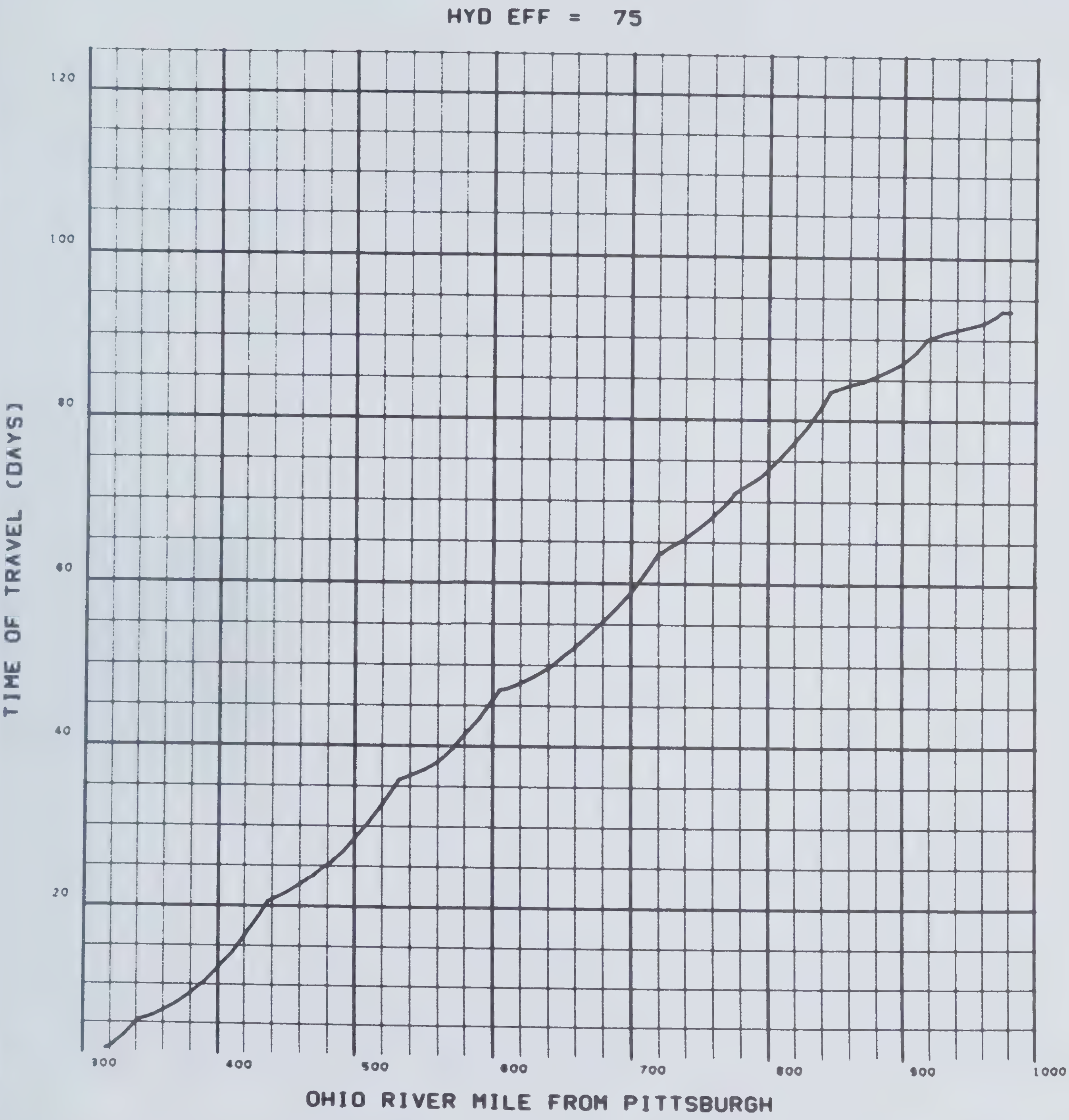

EXHIBIT F-7m – TIME OF TRAVEL IN OHIO RIVER WITH 75 PERCENT HYDRAULIC EFFICIENCY

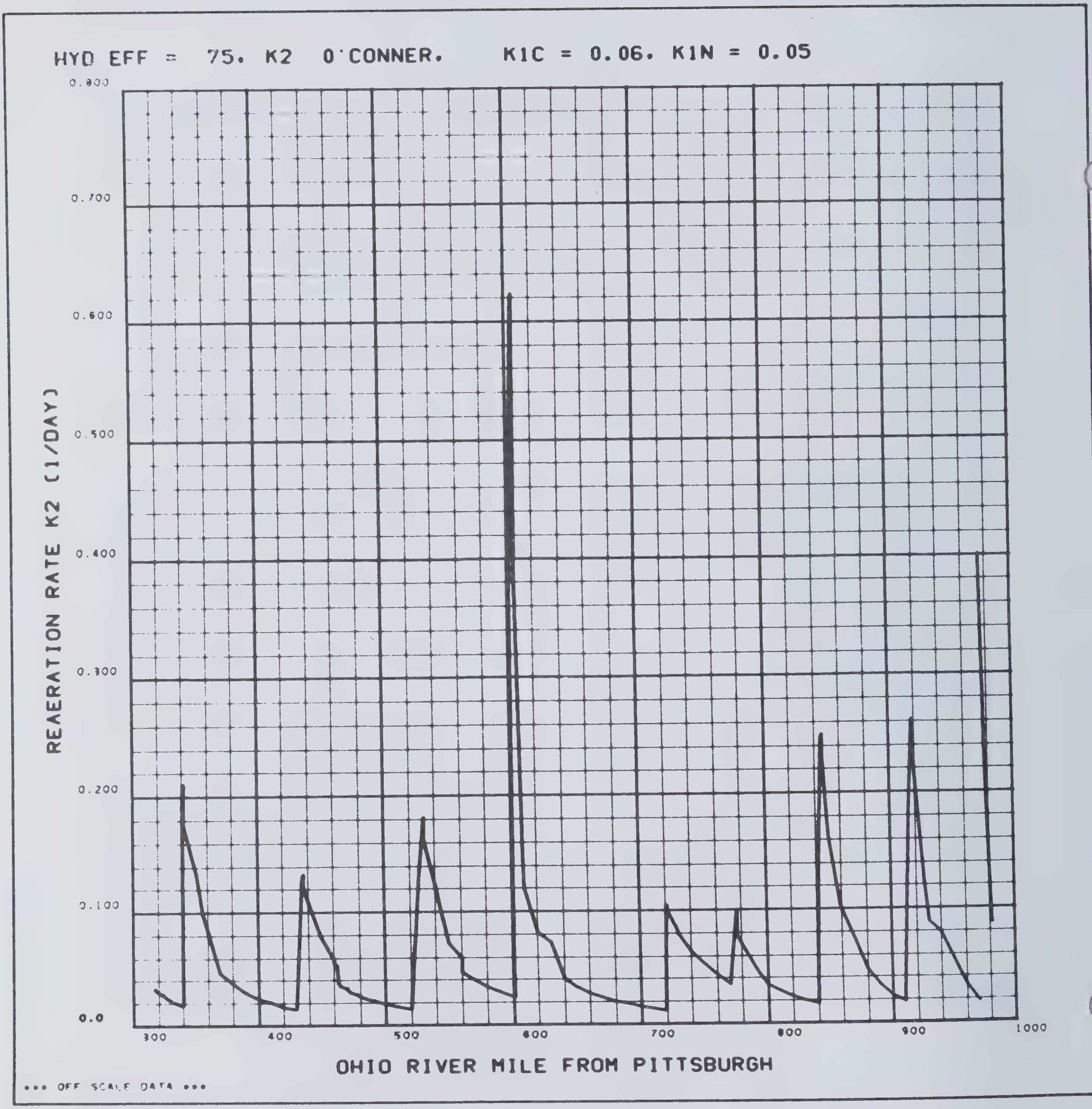

EXHIBIT F-8m REAERATION RATE IN OHIO RIVER USING O'CONNER'S EQUATION WITH 75 PERCENT HYDRAULIC EFFICIENCY

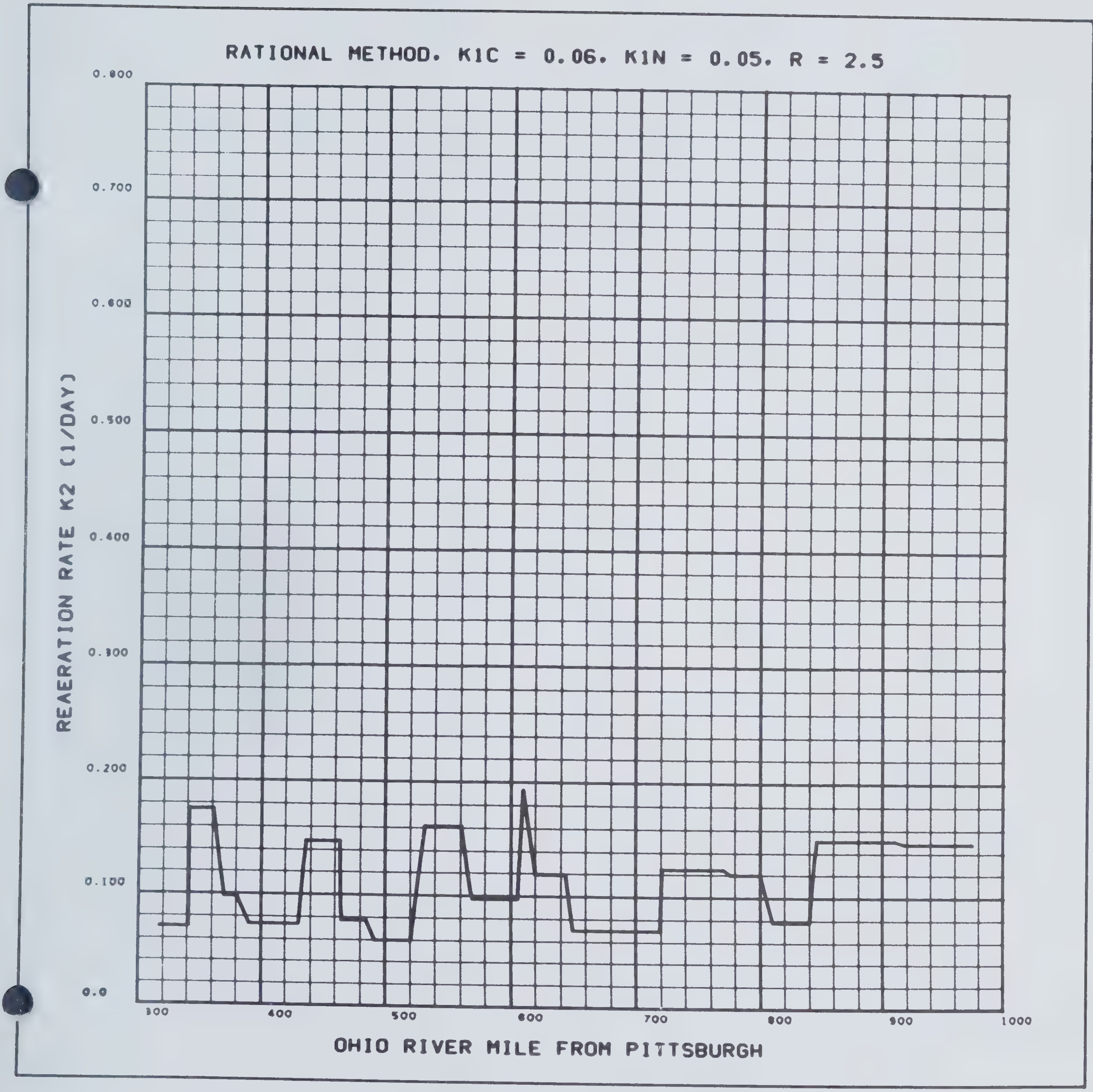

EXHIBIT F-9m -- REAERATION RATE IN OHIO RIVER USING RATIONAL METHOD WITH SURFACE REAERATION OF 2.5 LB/1,000 SQ. FT./DAY bonaceous demand in the river using the two methods are presented in Exhibits F-10m and F-11m, while the profiles of the nitrogenous oxygen demand for the two methods are presented in Exhibits F-12m and F-13m. DO profiles for the two methods are presented in Exhibits F-14m and F-15m. Computer outputs from which these plots are prepared are presented in Exhibits F-16t and F-17t.

The DO profiles presented in Exhibits F-14m and F-15m indicate the following:

1. There is a significant drop in the DO level in the pool behind the Greenup Dam.
2. There may be violations of the minimum DO standard in the Greenup pool. The Rational method shows only minor violations while O'Connors method shows significant violation in the DO level.
3. The reaeration is significant at the Greenup and Meldhal dams using both methods. The result is that no other violations in DO standards occur in any of the downstream pools.
4. In the pools below the Meldhal Dam the DO level is very good and approaches 90 percent of saturation. These results indicate that even without reaeration at the dams no isolation of minimum DO will occur in these pools.
5. The effects of reaeration at the other dams are minor and results in only a small increase in the DO level of the stream.

The drop in the DO level in the Greenup pool is the result of a combination of low reaeration and high background concentrations used for carbonaceous and nitrogenous oxygen demands. The concentrations of 3.52 mg/L for ultimate carbonaceous demand and 1.6 mg/L for nitrogenous demand are equivalent to 187,580 lbs of carbonaceous demand and 85,200 lbs of nitrogenous demand. Compared to these the total waste loads estimated to be discharged into the Ohio River reach between the Big Sandy River and the Greenup Dam from all significant point sources amount to 7,200 lbs of carbonaceous demand and 27,800 lbs of nitrogenous deamnd. These constitute less than 4 percent of the total carbonaceous oxygen demand and less than 25 percent of the nitrogenous oxygen demand loads. On the average less than 15 percent of the drop in DO levels may be attributed to the point source wastes discharged in this reach. The rest is directly attributed to the assumed background concentrations in the Ohio River.

CONCLUSIONS AND RECOMMENDATIONS

Analysis and evaluation of the results of water quality modeling of the stretch of the Ohio River from the Big Sandy River to the Mississippi River lead to the following conclusions and recommendations:

1. Secondary treatment and/or best practicable treatment appears to be adequate for all municipal and industrial discharges into the Ohio River from the Ohio River basin planning area.
2. Minimum DO level in the first 30 miles of the Ohio River below the Big Sandy River (in the Greenup pool) shows a large drop. This is primarily due to the large background concentration of carbonaceous and nitrogenous oxygen demands assumed for the incoming water quality in the Ohio River. The background concentrations used are comparable to the existing conditions with mostly primary treatment to all discharges. With the requirement of secondary and/or best practicable treatment to all discharges these background concentrations are expected to go down. The precise number for these concentrations can only be determined once upstream water quality is restored.
3. The Rational Method shows minor violations of DO in the Greenup Pool while O'Connors Method shows major violations. The major violation predicted by the O'Connors Method is primarily due to the very small reaeration rate values used. These aeration rates are considerably smaller than the values (less than one-fourth the values reported in O'Connors' paper) that can be expected in the Greenup pool. For pools with larger depths such as in the Ohio River, O'Connor's method is not applicable.
4. When the upstream portion of the Ohio River is restored with secondary and/or best practicable treatment the expected lower level of carboneous and nitrogenous loads together with recommended higher rate of reaeration in the O'Connors method is expected to raise the minimum DO above the 5 mg/L level.
5. Reaeration over the Greenup and Meldhal dams are significant and are important factors in keeping the DO level in the Ohio River above the 5 mg/L level in the pools formed by these dams. With proper operation a substantial amount of oxygen may be added to the Ohio River flow. If necessary some minor modifications to the existing dams, particularly during the low flow season, may be worthwhile. This will be a small price to pay in comparison to the cost of any additional treatment beyond secondary.
6. Any treatment consideration beyond secondary and/or best practicable for discharges from the Ohio River Basin may be premature at this time because of the liklihood that such additional treatment may be unnecessary. Any consideration for additional treatment should wait for the opportunity to observe the effects on the Ohio River water quality of secondary and/or best practicable treatment to all wastewater discharged into the river.
7. The proper agency should determine the actual reaeration rates at all the Ohio River dams during the low flow season and also should undertake studies to determine how addition of DO to the flow at each of the dams may be increased. The cost of addition of DO by improving the operation of these dams may be considerably smaller than reducing waste load discharges with increased levels of treatment
8. The proper agency should determine the flow times and hydraulic efficiency in the Ohio River pools. Also the actual surface reaeration rates (r values) should be determined.

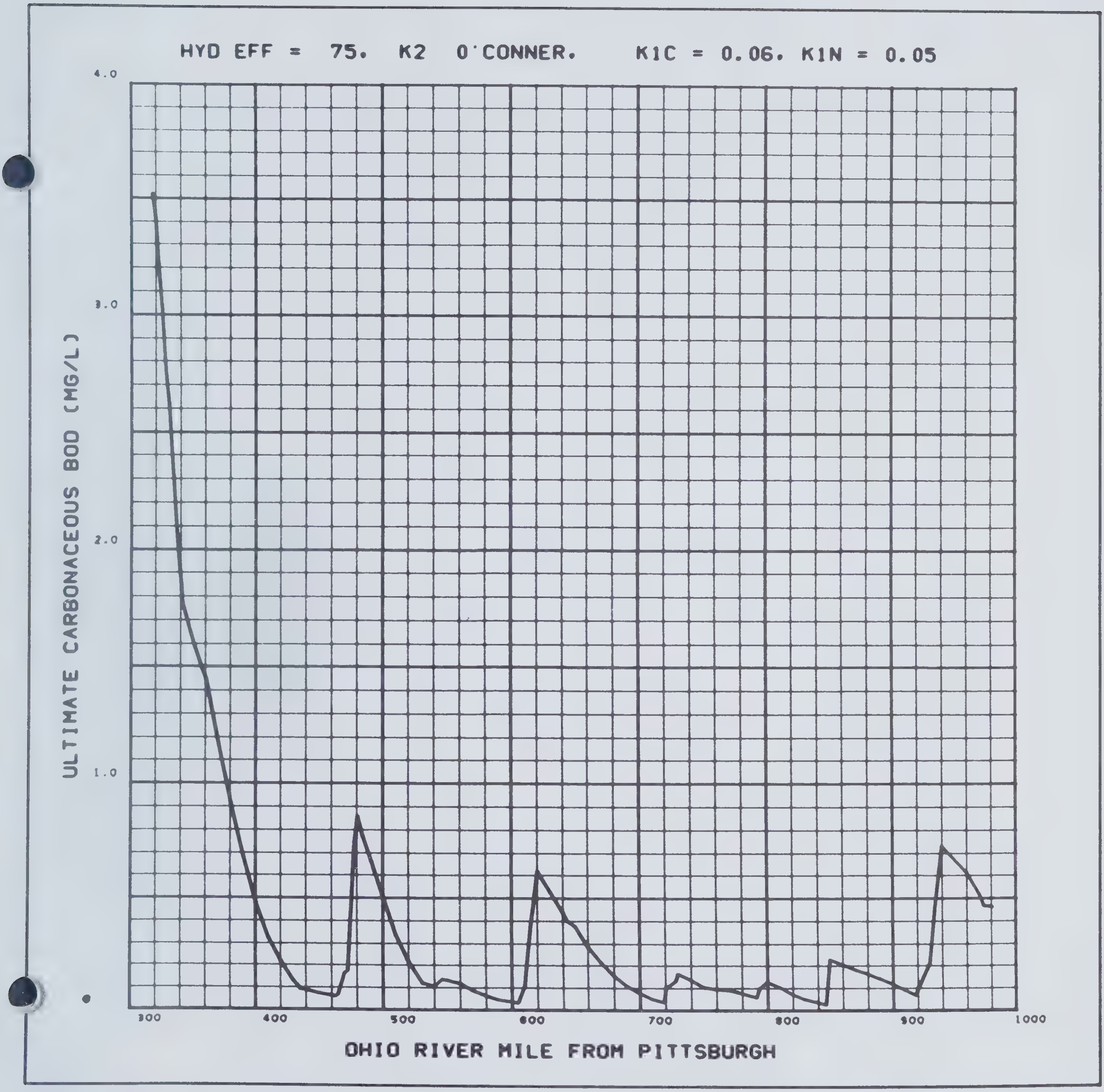

EXHIBIT F-10m -- ULTIMATE CARBONACEOUS BOD PROFILE IN OHIO RIVER USING O'CONNER'S REAERATION WITH 75 PERCENT HYDRAULIC EFFICIENCY

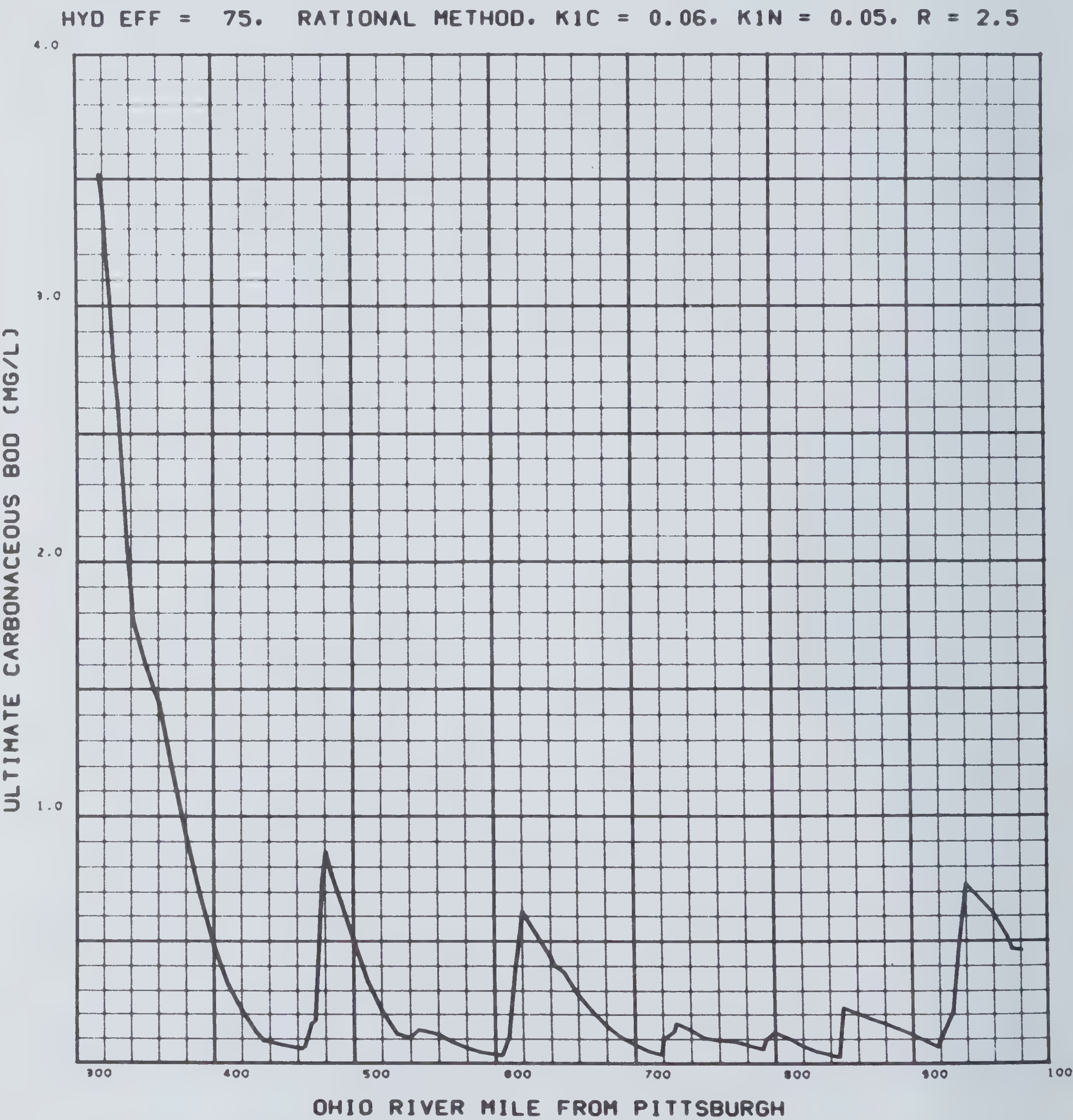

EXHIBIT F-11m -- ULTIMATE CARBONACEOUS BOD PROFILE IN OHIO RIVER USING RATIONAL METHOD WITH 75 PERCENT HYDRAULIC EFFICIENCY AND SURFACE REAERATION OF 2.5 LB/1,000 SQ. FT./DAY

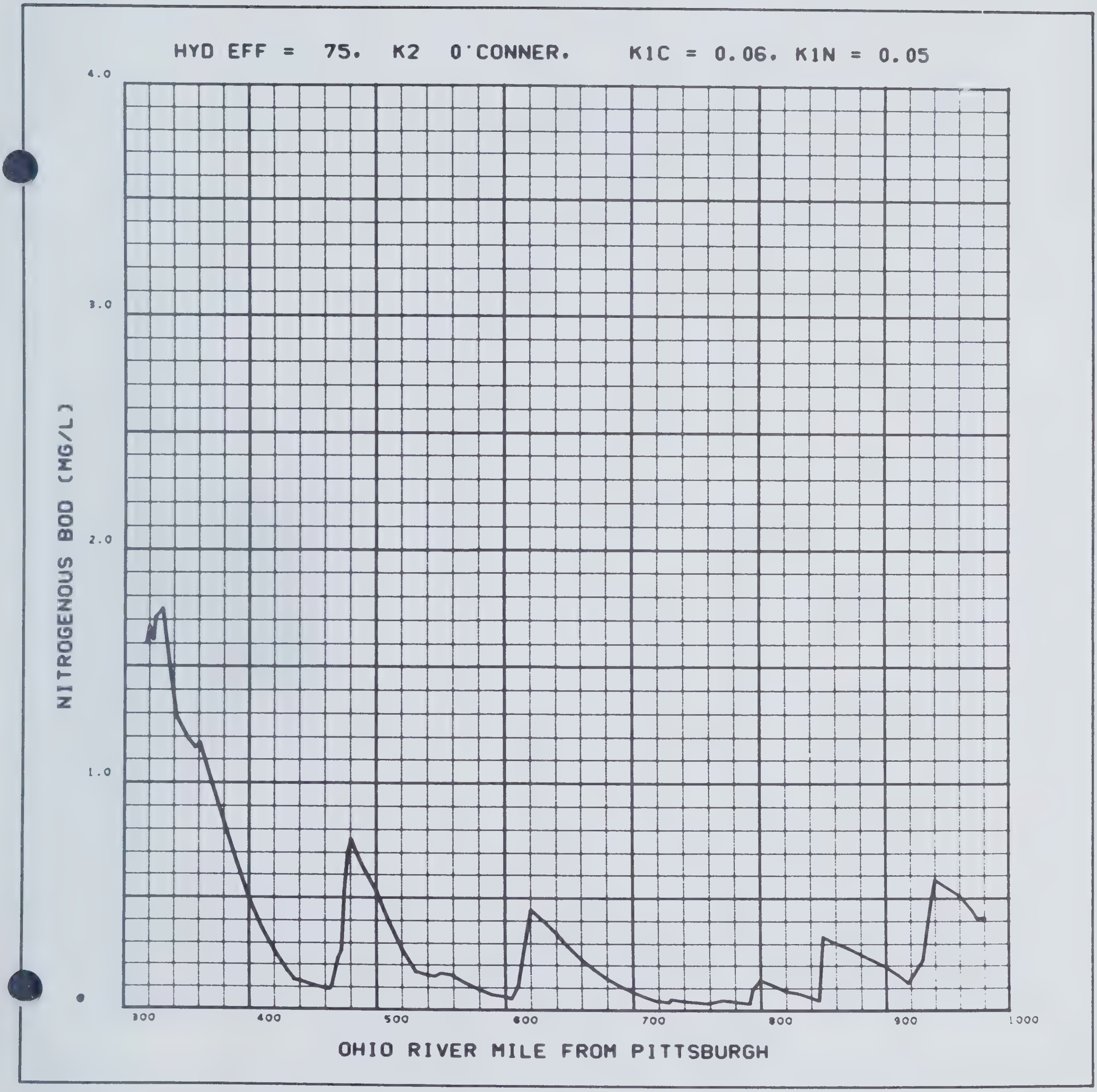

EXHIBIT F-12m – NITROGENOUS BOD PROFILE IN OHIO RIVER
USING O'CONNER'S REAERATION WITH 75 PERCENT HYDRAULIC EFFICIENCY

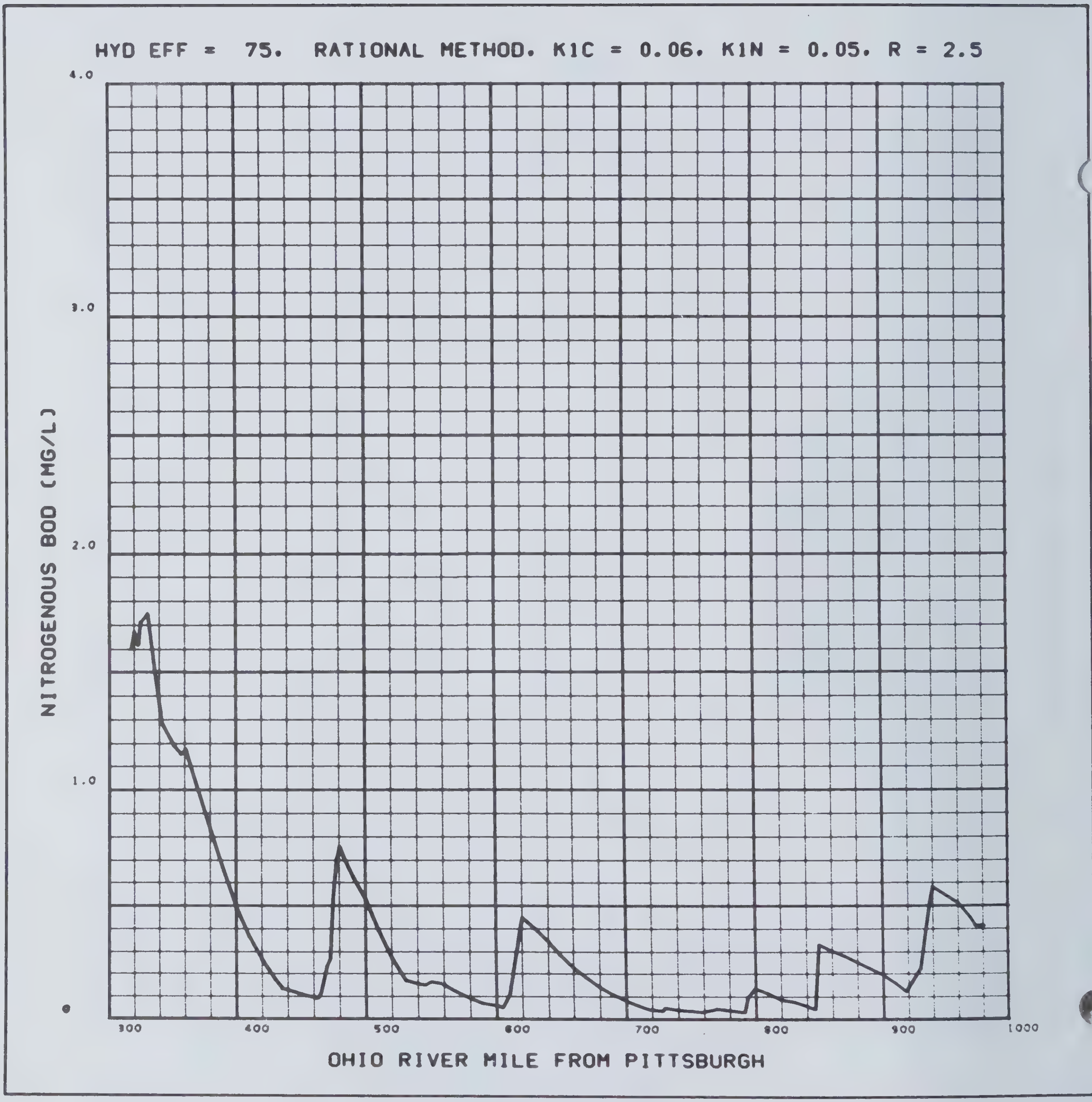

EXHIBIT F-13m - - NITROGENOUS BOD PROFILE IN OHIO RIVER USING RATIONAL METHOD WITH 75 PERCENT HYDRAULIC EFFICIENCY AND SURFACE REAERATION OF 2.5 LB/1,000 SQ. FT./DAY

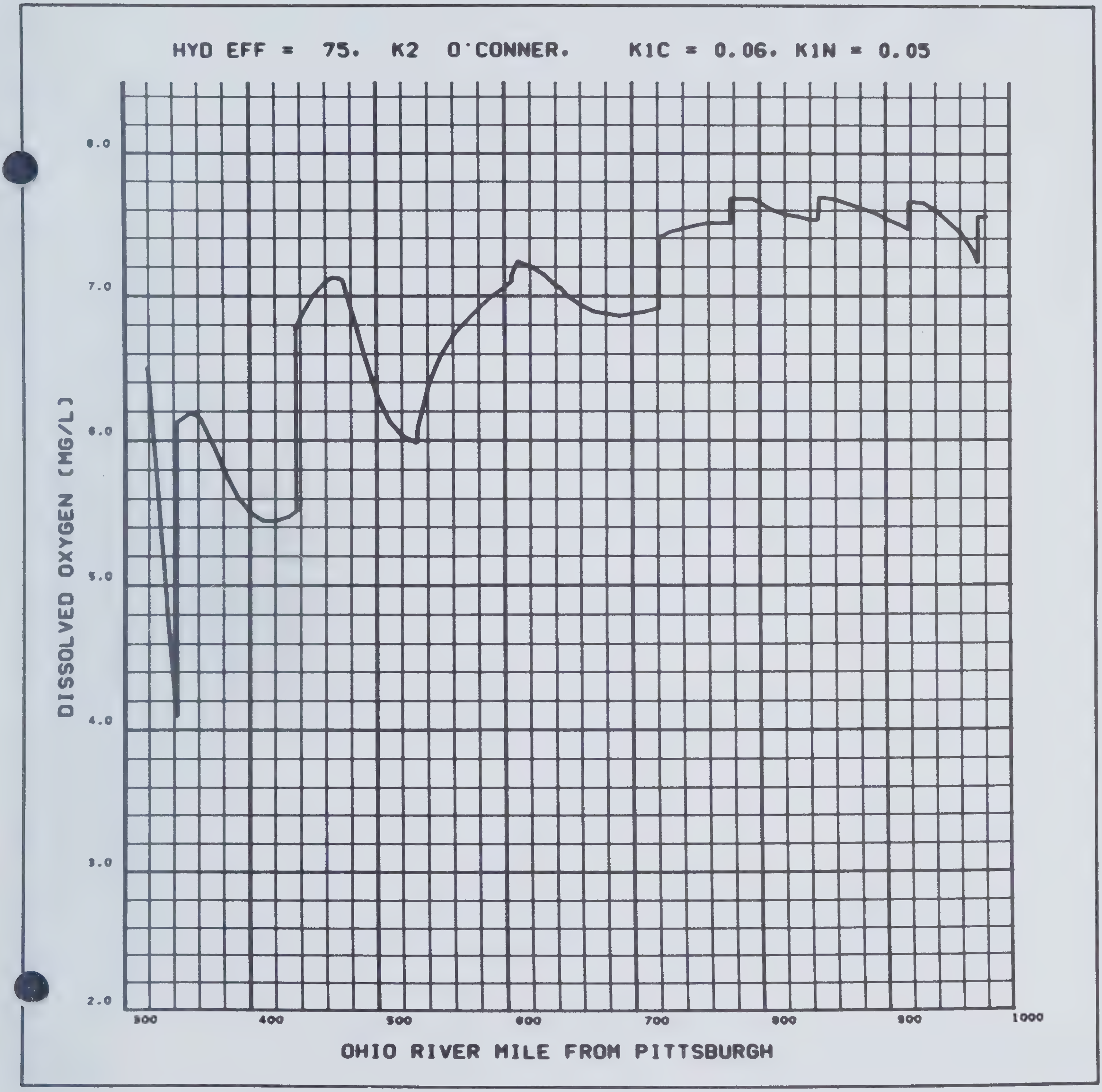

EXHIBIT F-14m -- DISSOLVED OXYGEN PROFILE IN OHIO RIVER USING O'CONNER'S REAERATION WITH 75 PERCENT HYDRAULIC EFFICIENCY

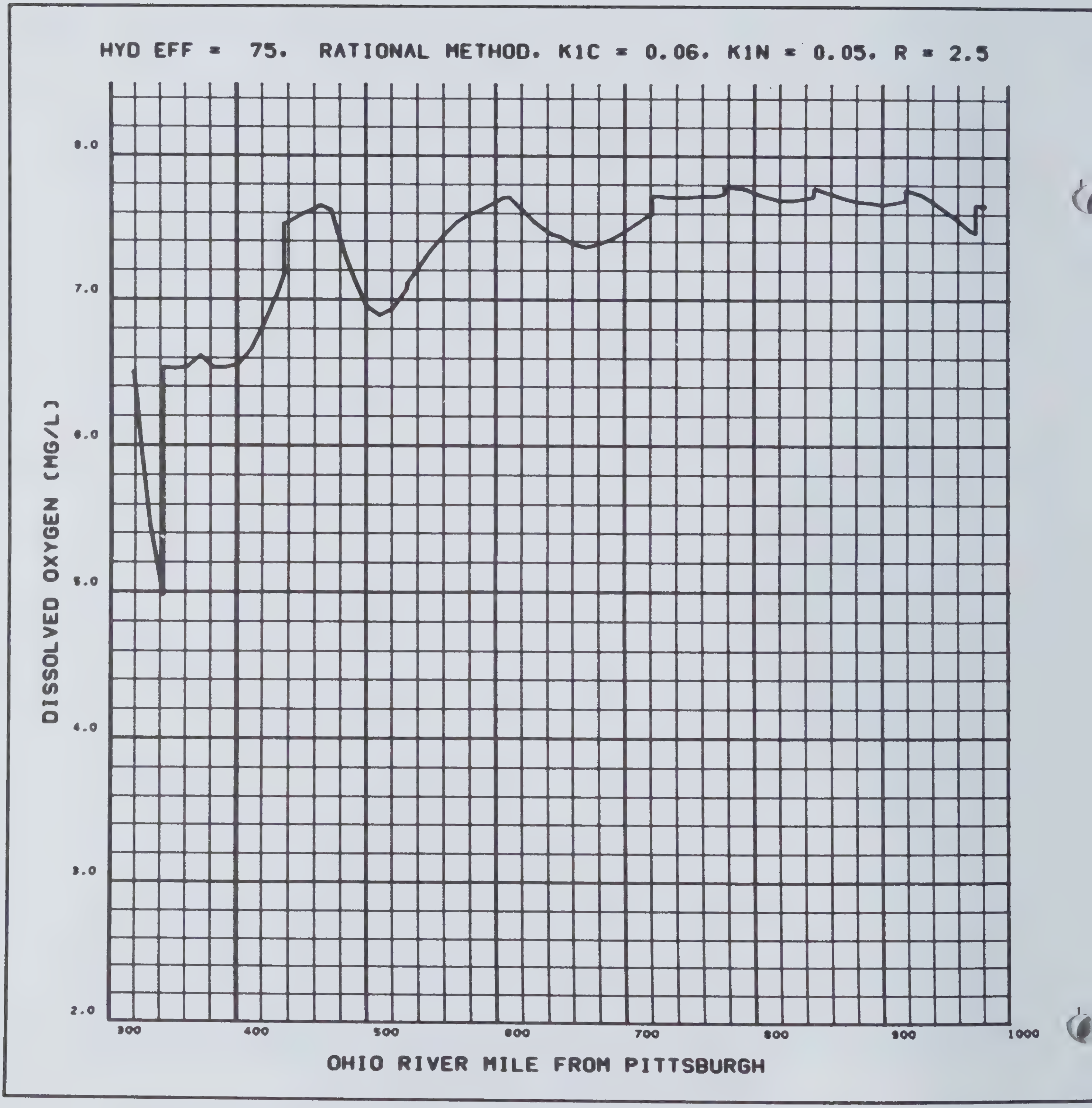

EXHIBIT F-15m -- DISSOLVED OXYGEN PROFILE IN OHIO RIVER USING RATIONAL METHOD WITH 75 PERCENT HYDRAULIC EFFICIENCY AND SURFACE REAERATION OF 2.5 LB/1,000 SQ. FT./DAY

EXHIBIT F-16t RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS FROM ORSANCO'S PROGRAM 'STREAM'
USING O'CONNER'S METHOD FOR REAERATION

MODE OF OPERATION IS RUN PAGE 1
OHIO RIVER VALLEY WATER SANITATION COMMISSION
KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF = 75, K2 O'CONNER, K1C = 0.06, K1N = 0.05
RUN NUMBER 2, APRIL 1975

NAME	MILE	DAY	TIME	FLOW cfs	VEL fps	DO DEF mg/L	DO mg/L	BODCU mg/L	BODN mg/L	K2 1/day
	316.9	1.	0.5000	9900.	0.52	1.321	6.50	3.520	1.600	0.0325
BIG SANDY RIVER	317.0	1.	0.5117	9900.	0.52	1.331	6.49	3.512	1.597	0.0324
ALLIED CHEM. NIT.	319.0	1.	0.7502	9900.	0.49	1.539	6.28	3.411	1.667	0.0299
ASHLAND STP	322.6	2.	0.2032	9900.	0.46	1.908	5.91	3.139	1.612	0.0273
ALLIED CHEM PLASTICS	324.2	2.	0.4152	9900.	0.45	2.074	5.75	3.034	1.710	0.0266
	330.0	3.	0.2481	9900.	0.39	2.685	5.14	2.612	1.747	0.0222
	340.0	4.	0.9971	9900.	0.30	3.641	4.18	1.844	1.330	0.0171
GREENUP LD	341.0	5.	0.2016	9900.	1.12	3.729	4.09	1.769	1.288	0.2102
	341.1	5.	0.2070	9900.	1.03	1.687	6.13	1.767	1.286	0.1742
PORTSMOUTH WW	351.0	5.	0.8116	9900.	0.88	1.627	6.19	1.578	1.183	0.1332
SCIOTO RIVER	356.5	6.	0.2242	9900.	0.71	1.647	6.17	1.489	1.147	0.0975
	360.0	6.	0.5267	9900.	0.61	1.683	6.14	1.443	1.173	0.0815
	370.0	7.	0.5736	9900.	0.53	1.860	5.96	1.167	0.993	0.0462
VANCEBURG ABERDEEN	380.0	8.	0.8003	9900.	0.45	2.057	5.76	0.910	0.817	0.0370
	390.0	10.	0.3016	9900.	0.36	2.222	5.60	0.674	0.646	0.0289
	400.0	12.	0.0492	9900.	0.32	2.331	5.49	0.473	0.489	0.0233
	410.0	13.	0.9943	9900.	0.30	2.380	5.44	0.319	0.359	0.0200
	420.0	16.	0.1879	9900.	0.26	2.385	5.44	0.210	0.257	0.0160
	430.0	18.	0.7024	9900.	0.22	2.347	5.47	0.126	0.172	0.0135
MELDAHL LD	436.2	20.	0.4687	9900.	0.70	2.306	5.51	0.088	0.130	0.1323
	436.3	20.	0.4774	9900.	0.68	1.043	6.78	0.088	0.130	0.1215
	440.0	20.	0.8116	9900.	0.65	0.962	6.86	0.082	0.123	0.1075
NEW RICHMOND	450.0	21.	0.6778	12100.	0.65	0.815	7.01	0.069	0.107	0.0779
CO BO RR	459.5	22.	0.6397	12100.	0.54	0.725	7.10	0.059	0.094	0.0581
	460.0	22.	0.6965	12100.	0.52	0.721	7.10	0.059	0.093	0.0549
CINCINNATI WW	462.8	23.	0.0280	12100.	0.50	0.700	7.12	0.055	0.089	0.0518
LITTLE MIAMI RIVER	463.5	23.	0.1071	12100.	0.55	0.696	7.12	0.054	0.087	0.0369
LITTLE MIAMI STP	465.1	23.	0.2835	12100.	0.53	0.691	7.13	0.064	0.107	0.0341
	470.0	23.	0.8462	12100.	0.51	0.701	7.12	0.160	0.230	0.0321

EXHIBIT F-16t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS
FROM ORSANCO'S PROGRAM 'STREAM' USING O'CONNER'S METHOD FOR REAERATION

MODE OF OPERATION IS RUN PAGE 2
OHIO RIVER VALLEY WATER SANITATION COMMISSION
KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF = 75, K2 O'CONNER, K1C = 0.06, K1N = 0.05
RUN NUMBER 2, APRIL 1975

NAME	MILE	DAY	TIME	FLOW	VEL	DO DEF	DO	BODCU	BODN	K2
				cfs	fps	mg/L	mg/L	mg/L	mg/L	1/day
LICKING RIVER	470.3	23.	0.8818	12100.	0.51	0.702	7.12	0.159	0.228	0.0316
MILL CREEK STP	472.6	24.	0.1597	12100.	0.48	0.709	7.11	0.168	0.264	0.0284
CAMBELL/KENTON CO.	478.0	24.	0.8474	12100.	0.46	0.865	6.96	0.742	0.697	0.0264
	480.0	25.	0.1161	12100.	0.44	0.931	6.89	0.852	0.751	0.0252
MONSANTO	484.2	25.	0.7078	12100.	0.41	1.064	6.76	0.767	0.694	0.0227
GREAT MIAMI RIVER	491.1	26.	0.7741	12100.	0.34	1.273	6.55	0.655	0.617	0.0212
	500.0	28.	0.4248	12100.	0.31	1.519	6.30	0.499	0.523	0.0184
	510.0	30.	0.4568	12100.	0.28	1.701	6.12	0.332	0.384	0.0159
	520.0	32.	0.7168	12100.	0.25	1.801	6.02	0.210	0.268	0.0139
MARKLAND LD	531.5	35.	0.6739	12100.	0.98	1.836	5.98	0.115	0.167	0.1813
	531.6	35.	0.6801	12100.	0.94	1.732	6.09	0.115	0.167	0.1618
	540.0	36.	0.2463	12100.	0.83	1.449	6.37	0.103	0.153	0.1230
KENTUCKY R	545.8	36.	0.6935	12100.	0.72	1.312	6.51	0.131	0.145	0.0929
	550.0	37.	0.0536	12100.	0.61	1.234	6.59	0.129	0.160	0.0719
CLIFTY CREEK	559.9	38.	0.0652	12100.	0.52	1.092	6.73	0.116	0.150	0.0584
CLIFTY CREEK PP	560.0	38.	0.0770	12100.	0.40	1.091	6.73	0.116	0.149	0.0456
	570.0	39.	0.6380	12100.	0.37	0.991	6.83	0.084	0.117	0.0397
	580.0	41.	0.3714	12100.	0.33	0.903	6.92	0.059	0.088	0.0332
	590.0	43.	0.3199	12100.	0.29	0.824	7.00	0.040	0.065	0.0288
LOUISVILLE WW	601.0	45.	0.7858	12100.	0.25	0.749	7.07	0.031	0.053	0.0238
MCALPINE LD	605.0	46.	0.7878	12100.	1.29	0.723	7.10	0.026	0.045	0.6231
	605.0	46.	0.7902	12100.	1.29	0.682	7.14	0.026	0.045	0.6084
	610.0	47.	0.0523	14300.	1.04	0.583	7.24	0.100	0.103	0.1181
	620.0	47.	0.7389	14300.	0.78	0.620	7.20	0.617	0.446	0.0798
	630.0	48.	0.5640	14300.	0.67	0.675	7.15	0.525	0.397	0.0719
	640.0	49.	0.5638	14300.	0.53	0.746	7.07	0.430	0.339	0.0391
OLIN	643.5	49.	0.9704	14300.	0.50	0.774	7.05	0.396	0.318	0.0371
	650.0	50.	0.7982	14300.	0.47	0.828	6.99	0.370	0.279	0.0324
	660.0	52.	0.1536	14300.	0.42	0.890	6.93	0.281	0.225	0.0265

EXHIBIT F-16t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS
FROM ORSANCO'S PROGRAM 'STREAM' USING O'CONNER'S METHOD FOR REAERATION

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                                                                    MODE OF OPERATION IS RUN          PAGE     3
                               OHIO RIVER VALLEY WATER SANITATION COMMISSION
          KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF =  75, K2 O'CONNER, K1C = 0.06, K1N = 0.05
RUN NUMBER 2, APRIL 1975
    NAME                   MILE       DAY      TIME      FLOW     VEL    DO DEF     DO    BODCU    BODN     K2

                                                          cfs     fps    mg/L      mg/L   mg/L     mg/L    1/day
                          670.0       53.     0.6166    14300.    0.40   0.930     6.89   0.209    0.178   0.0232
                          680.0       55.     0.2060    14300.    0.36   0.952     6.87   0.152    0.138   0.0196
                          690.0       56.     0.9456    14300.    0.33   0.958     6.86   0.107    0.105   0.0174
                          700.0       58.     0.8666    14300.    0.30   0.952     6.87   0.072    0.077   0.0150
                          710.0       61.     0.0115    14300.    0.27   0.935     6.89   0.047    0.055   0.0128
WESTERN KRAFT             719.0       63.     0.1819    14300.    0.24   0.912     6.91   0.031    0.039   0.0112
CANNELTON LD              720.7       63.     0.6222    14300.    0.70   0.913     6.91   0.101    0.037   0.1034
                          720.8       63.     0.6309    14300.    0.70   0.413     7.41   0.101    0.037   0.1022
WESTCOR                   721.7       63.     0.7100    14300.    0.68   0.408     7.41   0.099    0.036   0.0980
TELL CITY                 728.0       64.     0.2869    14300.    0.64   0.378     7.44   0.130    0.033   0.0852
                          730.0       64.     0.4791    14300.    0.61   0.372     7.45   0.162    0.046   0.0785
                          740.0       65.     0.5167    14300.    0.54   0.346     7.47   0.132    0.039   0.0635
                          750.0       66.     0.7098    14300.    0.47   0.326     7.49   0.103    0.033   0.0528
OWENSBORO                 758.5       67.     0.8871    14300.    0.41   0.312     7.51   0.090    0.027   0.0441
                          770.0       69.     0.8200    14300.    0.32   0.315     7.51   0.088    0.041   0.0339
NEWBURGH LD               776.1       71.     0.0758    14300.    0.69   0.315     7.51   0.077    0.037   0.0971
                          776.2       71.     0.0847    14300.    0.63   0.142     7.68   0.077    0.037   0.0761
EVANSVILLE WW             791.5       72.     0.6624    14300.    0.50   0.138     7.68   0.056    0.029   0.0467
EVANSVILLE WEST           793.8       72.     0.9508    14300.    0.47   0.143     7.68   0.097    0.090   0.0424
                          800.0       73.     0.8225    14300.    0.39   0.174     7.65   0.122    0.131   0.0327
                          810.0       75.     0.4496    14300.    0.35   0.218     7.60   0.101    0.109   0.0272
                          820.0       77.     0.2771    14300.    0.31   0.252     7.57   0.070    0.081   0.0229
MT.VERNON                 829.8       79.     0.3171    14300.    0.27   0.271     7.55   0.047    0.075   0.0195
                          840.0       81.     0.7878    14300.    0.23   0.288     7.53   0.031    0.053   0.0166
UNIONTOWN LD              846.0       83.     0.4603    14300.    1.07   0.292     7.53   0.023    0.041   0.2491
                          846.1       83.     0.4660    14300.    1.06   0.132     7.69   0.023    0.041   0.2309
                          850.0       83.     0.6935    14300.    0.99   0.130     7.69   0.224    0.326   0.1601
                          860.0       84.     0.2356    20000.    1.17   0.154     7.67   0.201    0.299   0.0988
                          870.0       84.     0.7572    20000.    1.05   0.178     7.64   0.181    0.275   0.0731
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EXHIBIT F-16t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS FROM ORSANCO'S PROGRAM 'STREAM' USING O'CONNER'S METHOD FOR REAERATION

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                                                MODE OF OPERATION IS RUN          PAGE      4
                           OHIO RIVER VALLEY WATER SANITATION COMMISSION
        KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF =  75, K2 O'CONNER, K1C = 0.06, K1N = 0.05
RUN NUMBER 2, APRIL 1975
     NAME            MILE        DAY       TIME      FLOW      VEL     DO DEF     DO      BODCU    BODN     K2

                                                      cfs      fps     mg/L      mg/L     mg/L     mg/L     1/day
                     880.0       85.      0.3707    20000.     0.84    0.207     7.61     0.160    0.249    0.0461
                     890.0       86.      0.1130    20000.     0.66    0.240     7.58     0.137    0.222    0.0320
                     900.0       87.      0.0528    20000.     0.50    0.277     7.54     0.114    0.191    0.0232
                     910.0       88.      0.3414    20000.     0.36    0.319     7.50     0.088    0.155    0.0170
SMITHLAND LD         918.5       90.      0.0031    20000.     1.19    0.360     7.46     0.063    0.119    0.2605
                     918.6       90.      0.0082    20000.     1.17    0.163     7.66     0.062    0.119    0.2358
                     930.0       90.      0.6522    20000.     0.93    0.172     7.65     0.207    0.220    0.0872
                     940.0       91.      0.1433    48500.     1.82    0.223     7.60     0.724    0.580    0.0785
                     960.0       91.      0.9956    48500.     0.99    0.381     7.44     0.610    0.508    0.0326
                     970.0       92.      0.7910    48500.     0.50    0.511     7.31     0.519    0.447    0.0178
MOUND CITY LD        974.0       93.      0.3407    48500.    10.08    0.592     7.23     0.465    0.410    0.8911
                     974.1       93.      0.3413    48500.     7.24    0.268     7.55     0.465    0.410    0.3995
MISSISSIPPI R        981.0       93.      0.4195    48500.     1.62    0.267     7.55     0.459    0.407    0.0864
                     982.0       93.      0.4573    48500.     0.48    0.271     7.55     0.456    0.404    0.0419
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EXHIBIT F-17t RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS FROM ORSANCO'S PROGRAM 'STREAM'
USING RATIONAL METHOD FOR REAERATION

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                                                   MODE OF OPERATION IS RUN          PAGE       I
                              OHIO RIVER VALLEY WATER SANITATION COMMISSION
              KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF =  75.,RATIONAL METHOD, K1C = 0.06, KIN = 0.05
RUN NUMBER 7, APRIL 1975 R = 2.5, K2 FROM TABLE 2, COLUMN 4
   NAME               MILE       DAY      TIME      FLOW     VEL     DO DEF     DO      BODCU     BODN     K2

                                                    cfs      fps     mg/L      mg/L     mg/L      mg/L     1/day
                      316.9       1.     0.5000     9900.    0.52    1.321     6.50     3.520     1.600    0.0702
BIG SANDY RIVER       317.0       1.     0.5117     9900.    0.52    1.329     6.49     3.512     1.597    0.0702
ALLIED CHEM. NIT.     319.0       1.     0.7502     9900.    0.49    1.508     6.31     3.411     1.667    0.0702
ASHLAND STP           322.6       2.     0.2032     9900.    0.46    1.808     6.01     3.139     1.612    0.0702
ALLIED CHEM PLASTICS  324.2       2.     0.4152     9900.    0.45    1.936     5.88     3.034     1.710    0.0702
                      330.0       3.     0.2481     9900.    0.39    2.368     5.45     2.612     1.747    0.0702
                      340.0       4.     0.9971     9900.    0.30    2.830     4.99     1.844     1.330    0.0702
GREENUP LD            341.0       5.     0.2016     9900.    1.12    2.854     4.97     1.769     1.288    0.0702
                      341.1       5.     0.2070     9900.    1.03    1.294     6.53     1.767     1.286    0.1749
PORTSMOUTH WW         351.0       5.     0.8116     9900.    0.88    1.300     6.52     1.578     1.183    0.1749
SCIOTO RIVER          356.5       6.     0.2242     9900.    0.71    1.288     6.53     1.489     1.147    0.1749
                      360.0       6.     0.5267     9900.    0.61    1.281     6.54     1.443     1.173    0.1749
                      370.0       7.     0.5736     9900.    0.53    1.209     6.61     1.167     0.993    0.0978
VANCEBURG ABERDEEN    380.0       8.     0.8003     9900.    0.45    1.294     6.53     0.910     0.817    0.0978
                      390.0      10.     0.3016     9900.    0.36    1.293     6.53     0.674     0.646    0.0725
                      400.0      12.     0.0492     9900.    0.32    1.273     6.55     0.473     0.489    0.0725
                      410.0      13.     0.9943     9900.    0.30    1.161     6.66     0.319     0.359    0.0725
                      420.0      16.     0.1879     9900.    0.26    0.990     6.83     0.210     0.257    0.0725
                      430.0      18.     0.7024     9900.    0.22    0.786     7.03     0.126     0.172    0.0725
MELDAHL LD            436.2      20.     0.4687     9900.    0.70    0.654     7.17     0.088     0.130    0.1473
                      436.3      20.     0.4774     9900.    0.68    0.296     7.52     0.088     0.130    0.1473
                      440.0      20.     0.8116     9900.    0.65    0.276     7.54     0.082     0.123    0.1473
NEW RICHMOND          450.0      21.     0.6778    12100.    0.65    0.231     7.59     0.069     0.107    0.1473
CO BO RR              459.5      22.     0.6397    12100.    0.54    0.190     7.63     0.059     0.094    0.1473
                      460.0      22.     0.6965    12100.    0.52    0.188     7.63     0.059     0.093    0.1473
CINCINNATI WW         462.8      23.     0.0280    12100.    0.50    0.176     7.64     0.055     0.089    0.1473
LITTLE MIAMI RIVER    463.5      23.     0.1071    12100.    0.55    0.174     7.65     0.054     0.087    0.1473
LITTLE MIAMI STP      465.1      23.     0.2835    12100.    0.53    0.169     7.65     0.064     0.107    0.0760
                      470.0      23.     0.8462    12100.    0.51    0.192     7.63     0.160     0.230    0.0760
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EXHIBIT F-17t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS
FROM ORSANCO'S PROGRAM 'STREAM' USING RATIONAL METHOD FOR REAERATION

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                                                            MODE OF OPERATION IS RUN          PAGE      2
                                        OHIO RIVER VALLEY WATER SANITATION COMMISSION
                  KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF =  75, RATIONAL METHOD, K1C = 0.06, K1N = 0.05
RUN NUMBER 7, APRIL 1975 R = 2.5, K2 FROM TABLE 2, COLUMN 4
     NAME                MILE       DAY      TIME      FLOW      VEL     DO DEF     DO      BODCU    BODN     K2
                                                       cfs       fps     mg/L      mg/L     mg/L     mg/L     1/day
LICKING RIVER           470.3       23.     0.9818    12100.     0.51    0.193     7.63     0.159    0.228    0.0760
MILL CREEK STP          472.6       24.     0.1597    12100.     0.48    0.205     7.62     0.168    0.264    0.0760
CAMBELL/KENTON CO.      478.0       24.     0.8474    12100.     0.46    0.362     7.46     0.742    0.697    0.0760
                        480.0       25.     0.1161    12100.     0.44    0.424     7.40     0.852    0.751    0.0760
MONSANTO                484.2       25.     0.7078    12100.     0.41    0.539     7.28     0.767    0.694    0.0760
GREAT MIAMI RIVER       491.1       26.     0.7741    12100.     0.34    0.694     7.13     0.655    0.617    0.0587
                        500.0       28.     0.4248    12100.     0.31    0.870     6.95     0.499    0.523    0.0587
                        510.0       30.     0.4568    12100.     0.28    0.933     6.89     0.332    0.384    0.0587
                        520.0       32.     0.7168    12100.     0.25    0.891     6.93     0.210    0.268    0.0587
MARKLAND LD             531.5       35.     0.6739    12100.     0.98    0.755     7.07     0.115    0.167    0.1611
                        531.6       35.     0.6801    12100.     0.94    0.713     7.11     0.115    0.167    0.1611
                        540.0       36.     0.2463    12100.     0.83    0.602     7.22     0.103    0.153    0.1611
KENTUCKY R              545.8       36.     0.6935    12100.     0.72    0.530     7.29     0.131    0.145    0.1611
                        550.0       37.     0.0536    12100.     0.61    0.482     7.34     0.129    0.160    0.1611
CLIFTY CREEK            559.9       38.     0.0652    12100.     0.52    0.371     7.45     0.116    0.150    0.1611
CLIFTY CREEK PP         560.0       38.     0.0770    12100.     0.40    0.370     7.45     0.116    0.149    0.1611
                        570.0       39.     0.6380    12100.     0.37    0.280     7.54     0.084    0.117    0.0967
                        580.0       41.     0.3714    12100.     0.33    0.234     7.59     0.059    0.088    0.0967
                        590.0       43.     0.3199    12100.     0.29    0.186     7.63     0.040    0.065    0.0967
LOUISVILLE WW           601.0       45.     0.7858    12100.     0.25    0.140     7.68     0.031    0.053    0.0967
MCALPINE LD             605.0       46.     0.7878    12100.     1.29    0.124     7.70     0.026    0.045    0.0967
                        605.0       46.     0.7902    12100.     1.29    0.117     7.70     0.026    0.045    0.0967
                        610.0       47.     0.0523    14300.     1.04    0.113     7.71     0.100    0.103    0.1933
                        620.0       47.     0.7389    14300.     0.78    0.199     7.62     0.617    0.446    0.1185
                        630.0       48.     0.5640    14300.     0.67    0.292     7.53     0.525    0.397    0.1185
                        640.0       49.     0.5638    14300.     0.53    0.358     7.46     0.430    0.339    0.1185
OLIN                    643.5       49.     0.9704    14300.     0.50    0.372     7.45     0.396    0.318    0.1185
                        650.0       50.     0.7982    14300.     0.47    0.392     7.43     0.370    0.279    0.0690
                        660.0       52.     0.1536    14300.     0.42    0.444     7.38     0.281    0.225    0.0690
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EXHIBIT F-17t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS
FROM ORSANCO'S PROGRAM 'STREAM' USING RATIONAL METHOD FOR REAERATION

MODE OF OPERATION IS RUN PAGE 3

OHIO RIVER VALLEY WATER SANITATION COMMISSION
KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF = 75, RATIONAL METHOD, K1C = 0.06, KIN = 0.05
RUN NUMBER 7, APRIL 1975 R = 2.5, K2 FROM TABLE 2, COLUMN 4

NAME	MILE	DAY	TIME	FLOW	VEL	DO DEF	DO	BODCU	BODN	K2
				cfs	fps	mg/L	mg/L	mg/L	mg/L	1/day
	670.0	53.	0.6166	14300.	0.40	0.458	7.36	0.209	0.178	0.0690
	680.0	55.	0.2060	14300.	0.36	0.441	7.38	0.152	0.138	0.0690
	690.0	56.	0.9456	14300.	0.33	0.403	7.42	0.107	0.105	0.0690
	700.0	58.	0.8666	14300.	0.30	0.350	7.47	0.072	0.077	0.0690
	710.0	61.	0.0115	14300.	0.27	0.289	7.53	0.047	0.055	0.0690
WESTERN KRAFT	719.0	63.	0.1819	14300.	0.24	0.232	7.59	0.031	0.039	0.0690
CANNELTON LD	720.7	63.	0.6222	14300.	0.70	0.228	7.59	0.101	0.037	0.1243
	720.8	63.	0.6309	14300.	0.70	0.103	7.72	0.101	0.037	0.1243
WESTCOR	721.7	63.	0.7100	14300.	0.68	0.103	7.72	0.099	0.036	0.1243
TELL CITY	728.0	64.	0.2869	14300.	0.64	0.105	7.72	0.130	0.033	0.1243
	730.0	64.	0.4791	14300.	0.61	0.107	7.71	0.162	0.046	0.1243
	740.0	65.	0.5167	14300.	0.54	0.112	7.71	0.132	0.039	0.1243
	750.0	66.	0.7098	14300.	0.47	0.109	7.71	0.103	0.033	0.1243
OWENSBORO	758.5	67.	0.8871	14300.	0.41	0.102	7.72	0.090	0.027	0.1243
	770.0	69.	0.8200	14300.	0.32	0.102	7.72	0.088	0.041	0.1243
NEWBURGH LD	776.1	71.	0.0758	14300.	0.69	0.095	7.73	0.077	0.037	0.1197
	776.2	71.	0.0847	14300.	0.63	0.043	7.78	0.077	0.037	0.1197
EVANSVILLE WW	791.5	72.	0.6624	14300.	0.50	0.051	7.77	0.056	0.029	0.1197
EVANSVILLE WEST	793.8	72.	0.9508	14300.	0.47	0.056	7.76	0.097	0.090	0.1197
	800.0	73.	0.8225	14300.	0.39	0.082	7.74	0.122	0.131	0.1197
	810.0	75.	0.4496	14300.	0.35	0.113	7.71	0.101	0.109	0.0771
	820.0	77.	0.2771	14300.	0.31	0.131	7.69	0.070	0.081	0.0771
MT.VERNON	829.8	79.	0.3171	14300.	0.27	0.130	7.69	0.047	0.075	0.0771
	840.0	81.	0.7878	14300.	0.23	0.121	7.70	0.031	0.053	0.0771
UNIONTOWN LD	846.0	83.	0.4603	14300.	1.07	0.108	7.71	0.023	0.041	0.1496
	846.1	83.	0.4660	14300.	1.06	0.049	7.77	0.023	0.041	0.1496
	850.0	83.	0.6935	14300.	0.99	0.058	7.76	0.224	0.326	0.1496
	860.0	84.	0.2356	20000.	1.17	0.094	7.73	0.201	0.299	0.1496
	870.0	84.	0.7572	20000.	1.05	0.119	7.70	0.181	0.275	0.1496

EXHIBIT F-17t (Continued) RESULTS OF OHIO RIVER WATER QUALITY ANALYSIS
FROM ORSANCO'S PROGRAM 'STREAM' USING RATIONAL METHOD FOR REAERATION

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                                                                   MODE OF OPERATION IS RUN          PAGE     4
                                   OHIO RIVER VALLEY WATER SANITATION COMMISSION
            KENTUCKY 303(E) BASIN PLAN FOR OHIO RIVER MAIN STEM BY METCALF & EDDY
HYD EFF =  75, RATIONAL METHOD, K1C = 0.06, KIN = 0.05
RUN NUMBER 7, APRIL 1975 R = 2.5, K2 FROM TABLE 2, COLUMN 4
    NAME              MILE       DAY      TIME      FLOW     VEL    DO DEF     DO    BODCU    BODN      K2
                                                    cfs      fps    mg/L      mg/L   mg/L     mg/L     1/day
                     880.0       85.     0.3707    20000.    0.84   0.138     7.68   0.160    0.249    0.1496
                     890.0       86.     0.1130    20000.    0.66   0.151     7.67   0.137    0.222    0.1496
                     900.0       87.     0.0528    20000.    0.50   0.156     7.66   0.114    0.191    0.1496
                     910.0       88.     0.3414    20000.    0.36   0.149     7.67   0.088    0.155    0.1496
SMITHLAND LD         918.5       90.     0.0031    20000.    1.19   0.130     7.69   0.063    0.119    0.1473
                     918.6       90.     0.0082    20000.    1.17   0.059     7.76   0.062    0.119    0.1473
                     930.0       90.     0.6522    20000.    0.93   0.090     7.73   0.207    0.220    0.1473
                     940.0       91.     0.1433    48500.    1.82   0.142     7.68   0.724    0.580    0.1473
                     960.0       91.     0.9956    48500.    0.99   0.270     7.55   0.610    0.508    0.1473
                     970.0       92.     0.7910    48500.    0.50   0.338     7.48   0.519    0.447    0.1473
MOUND CITY LD        974.0       93.     0.3407    48500.   10.08   0.365     7.46   0.465    0.410    0.1473
                     974.1       93.     0.3413    48500.    7.24   0.165     7.66   0.465    0.410    0.1473
MISSISSIPPI R        981.0       93.     0.4195    48500.    1.62   0.175     7.65   0.459    0.407    0.0000
                     982.0       93.     0.4573    48500.    0.48   0.181     7.64   0.456    0.404    0.0000
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